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AUTHOR	Brown, Ellen
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ABSTRACT

This ecological study is one part of a broad research effort to understand the backgrounds and characteristics of culturally disadvantaged children. The study attempted to provide empirical data which could be used to describe differences in home environments and behavior of three young children from deprived and non-deprived homes. Focus was on the investigation of the behavior objects of 3-year-olds from urban and rural low income and urban middle income homes. Behavior objects are the things and people in the environment which the child uses as essential supports for his molar behavior. Behavior objects were identified from narrative reports based on direct observation of each subject in the home. Specific criteria were used for identifying the behavior objects in the narrative reports, and the objects were described according to 8 descriptive categories. The investigation yielded two general kinds of results: (1) frequencies and rates of occurrence of behavior objects, and indicators of the rate of flow of behavior objects through the environment, and (2) classification of behavior objects, reflecting qualitative differences. Results were suggestive rather than conclusive, but significant differences between families were indicated. (DP)

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A STUDY IN ECOLOGICAL PSYCHOLOGY: THE BEHAVIOR OBJECTS USED BY THREE-YEAR-OLD CHILDREN FROM THREE INCOME GROUPS

ELLEN BROWN

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A STUDY IN ECOLOGICAL PSYCHOLOGY: THE BEHAVIOR OBJECTS USED BY THREE-YEAR-OLD CHILDREN FROM THREE INCOME GROUPS

by

Ellen Brown

Bachelor of Arts

Mount Holyoke College

A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of

Master of Arts

in the

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of the

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Introduction

The culturally deprived child has become increasingly popular as the subject of research and discussion in recent years. Many studies have pointed out the differences which exist between deprived and non-deprived children when they enter school, as well as the high rate of school dropouts and lack of school skills which seem characteristic of older deprived children. Suggestions have been made as to the reasons such failures occur---the "basic needs" of the children have not been satisfied (Bloom, Davis, & Hess, 1965); deprived children behave and respond in ways different from those expected by the schools (Deutsch, 1966); differences in values exist which lead to conflicts between a lower-class child and his middle-class teachers and leaders (McCandless, 1967)---but few investigations have been made to collect empirical data in natural life situations to support these conjectures.

In order to better understand the behavioral characteristics of deprived school-age children and to devise needed adjustments within the school situation, it is obvious that the lives of these children prior to their entrance in first grade must be examined. Investigators agree that factors in the home have major importance in influencing language and cognitive development, development of interest in learning, attention span, and motivation of the child (Bloom, 1965; Bloom et al., 1965; Frost & Hawkes, 1966). The child's perceptual development depends strongly on the interaction between him and his environment. It seems clear that the impoverished environments of disadvantaged children can be determining factors in retarding their intellectual and perceptual

development and in giving them a poor preparation for the types of tasks with which they are confronted in school. However very little research has been done in documenting empirically the specific content of the home environment of the very young child whether disadvantaged or not and in examining the amount and quality of contact such a child makes with his environment.

An investigation of this kind is being carried out as part of a broader research program at the Demonstration and Research Center for Early Education (DARCEE) at George Peabody College for Teachers. The central mission of DARCEE is that of improving the educability of young children with particular emphasis on those from low income homes in the southeastern region of the United States. In the Ecological Section of DARCEE a study is underway of the behavior and the environmental conditions in the everyday lives of three-year-old children utilizing direct observations of the children in their homes. In ecological research, the investigator discards the managing, directing, manipulating, and controlling role of the psychologist as operator and limits himself to the passive, non-interfering, receiving, transmitting and coding functions of the psychologist as transducer (Barker, 1965). In so doing he faces directly the continuous flow of behavior which is complex, subtle, and rich in detail. At the same time, he must deal with the naturally occurring conditions of the environment with which the behavior is linked.

This approach appears to have usefulness in investigating the early lives of deprived children. While suggestions have been advanced as to a few possible environmental conditions which may affect the behavior

of these children, it is clear that even these do not cover the many factors which are necessarily involved in a young child's life. In order to investigate adequately and completely such influential factors, it is necessary to observe the child directly as he moves in and interacts with the environment in his home and in other settings in which he normally participates. The observer tries not to interfere with or influence the child's behavior; instead he carefully describes events in the child's naturally occurring world.

Purpose of the Study

Most research dealing with deprived or disadvantaged children has identified such children in terms of demographic characteristics of the family such as income, occupation level and amount of education of the parents. However, little is known about how such relatively abstract demographic variables operate concretely in influencing the course of child development. For example, income level presumably determines fairly directly the number and kinds of material things available to the child, and education of parents is thought to determine the amount and quality of social stimulation in the home. But such assumptions have rarely been documented in a scientifically adequate way. It is the purpose of this study to provide such documentation for a small group of young children by studying concretely the things and people encountered by each child in his everyday life and describing his behavior with reference to them. Such things and people in the environment of which the child is aware and which he uses as essential supports for his molar behavior are defined as behavior objects. A technique for analysis of behavior objects from ecological specimen records was devised by Schoggen (1951). In his studies the technique was applied to day-long observational records of seven- and eight-year-old children from middle class homes. In the present study an attempt was made to apply the technique to shorter records of young children from very low as well as middle income homes. Because of these differences, part of the purpose of this study was to make necessary changes and determine whether this technique is feasible for use with these records. If the technique could be used it is hoped

that the results of such an analysis would provide a start toward an index of deprivation based on empirical data.

Method

Subjects

Twenty-four three-year-old children were used as subjects in the main study. They were selected from areas in and around Nashville, Tennessee. Eight children, the Rural Low Income group, lived in a small, isolated, white community approximately 20 miles from Nashville. The Urban Low Income group was composed of four black families and four white families, some from a large housing development and others from various urban areas of the city. The Urban Middle Income group consisted of four white and four black families from several neighborhoods in the city.

Because of the extensive amount of work and time required to revise and apply the technique of analysis to the observation records, only three children, one from each of the above groups, were used as subjects for this study. Observations of each child were selected for analysis on the basis of the similarity of the behavior settings in which most of the observed behavior took place. There were three observation records each for two of the subjects, Rachel Tweed and Connie Roper, but it was necessary to use four records of Owen Culster, two of which were very short, to include settings similar to those of the other subjects. Each child was observed for a total of approximately 90 minutes. The subjects and brief descriptions of their families follow:

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Rachel Tweed (rural, low income) was a small three-year-old with very pale skin and light hair. She was the fifth in a family of seven children. During the observations there were four children present: Rachel, Randy, 4, Robert, 2, and Vera, 1. Mr. and Mrs. Tweed were a couple in their late twenties. Mr. Tweed had limited use of one arm but held a job with a company which sold electrical appliances. The observers did not meet Mr. Tweed nor most of the older children. Mrs. Tweed was a cheerful woman who took great pride in her home and her children, and seemed competent despite very limited space and facilities. The Tweed home was a three-room house located on a large lot in the rural community. The house was near a creek from which the Tweeds drew all of their washing and drinking water.

Owen Edward Culster (urban, low income) was a blond three-year-old who was the third in a family of five children. He was a pleasant looking child, yet had the hollow-eyed, hungry look associated with the poor. At certain times he also had a very unpleasant and even cruel look, especially when dealing with his siblings. Mrs. Culster was 20 years old. The effects of a long history of poverty were apparent in her appearance, conversation, and resigned, plaintive way of speaking. Mr. Culster was a 26-year-old laborer for a construction company and sometimes a house painter and roofer. During the observations when he was present, the children often seemed afraid of him. The Culsters lived in an upstairs apartment in a very old building in the city. They had a three-room unkempt apartment which was furnished with broken, badly worn furniture. Cockroaches, ants, flies, and signs of rats often

were observed in the apartment. The children were poorly dressed, wearing dirty clothing inappropriate to the temperature and often inappropriate to the sex of the children.

Connie Roper (urban, middle income) was the ninth in a family of ten children. She was petite and seemed very young for her age. She was very fond of her brother, Phil, age 4, and usually chose to be with him. The Ropers were an active, busy upper middle class family. They lived in a comfortable 14-room house which was both attractive and efficiently organized, in a spacious suburb 10 miles from the center of town. Mrs. Roper was an energetic woman who managed to spend a great deal of time with her children as well as participate in several community activities. Both she and Dr. Roper, an orthodontist, were concerned with proper nutrition and activities for their children.

Procedure

Specimen records. The basic data in the main ecological study at DARCEE are in the form of specimen records. A specimen record is a detailed, narrative account of a segment of a child's behavior and situation as seen by skilled observers (Wright, 1967). Each of the specimen records of the three-year-olds in the main study includes a full account of the ongoing behavior and environmental conditions of these children for about half an hour. The collection of these records was one of the major purposes of the main research undertaking. Between seven and ten specimen records were collected for each of the 24 children. Each record covers approximately 30 minutes, though because of uncontrollable circumstances, several of the observations were of somewhat

shorter duration. Altogether, there are approximately 230 minutes of behavior described for each child.

Two observers made the specimen records for each child in order to prevent single observer bias or style of reporting from influencing the results too strongly. The observations were made on different days over periods of time ranging from six weeks to several months. When first contacts were made with the families, the purpose of the research was explained and consent was obtained for the observers to make their visits to the home. A period of adaptation followed, which generally consisted of two or three visits before the actual observations began. During these visits the observers became acquainted with the families and the home, and the families, especially the subject and his mother, learned to ignore the presence of the observers and become familiar with their equipment.

An attempt was made to observe the children in similar behavior settings for purposes of comparison. Because of the differences in home routines and organizations, this attempt encountered many problems, but, in general, observations were made during mealtimes or when the children were playing.

There was great variety among mealtimes in the families, apart from behavioral differences. Attempts were made to observe families at lunchtime when the mother was at home. Some of the problems which made this impossible included families who ate no lunch, families who waited to eat until after the observer had left, and families in which a maid fed the children at lunch. For this reason the "mealtime" settings range from lunch to snacks to dinner.

There were also differences in the play situations. In some homes all the children played together with very little or no adult supervision and the play took place in the yard as well as in the house. In other homes all play was carefully supervised if not totally structured by adults. These dissimilarities may have provided differences in number and types of behavior objects the child encountered, his use of them, and the nature of the initiation of the transaction between child and object. The observation records used in this study are listed below with brief descriptions of the settings and persons present in each.

Rachel Tweed

12.01. Observer: Ellen Brown. The observation was made in the late morning. Rachel was playing in the living room of the house with her mother and three siblings present. The children ate crackers and chewed chicken bones, but no formal meal was observed.

12.02. Observer: Dikkie Schoggen. Similar to the setting in 12.01, except complete absence of food.

12.08. Observer: Ellen Brown. Setting the same as 12.01 and 12.02. One fourth of the observation involved eating (in the living room); the rest was play.

Owen Edward Culster

01.03. Observer: Janet Reeves. Owen, Mother, Father and four siblings were present. The observation took place in the early evening and included Owen eating dinner at the kitchen counter with his family.

01.04. Observer: Janet Reeves. The observation was in the late afternoon and involved Owen playing in the living room with the mother and father present. Owen ate a honeybun cake throughout the observation.

01.08. Observer: Beth McCandless. Owen, the mother three siblings, and an unidentified man were present. The observation was in the afternoon and involved play in the living room and kitchen. Food consisted of a candy bar and some fruitcake crumbs.

01.09. Observer: Dikkie Schoggen. The observation was in mid-afternoon with Owen, the mother and four siblings present. Activity was play in the living room. No food was observed.

Connie Roper

21.02. Observer: Dikkie Schoggen. Connie, the mother, three siblings, and two of their friends were present. The observation was at noon and involved the children eating lunch at a picnic table outside.

21.07. Observer: Ellen Brown. Connie, her mother, seven siblings and six of their friends were present. Activity included lunch inside for one half of the observation and play outside for the remaining half.

21.08. Observer: Dikkie Schoggen. Connie, her mother, nine siblings, and two of their friends were present. For half the observation Connie and Phil, her brother, played alone in the downstairs playroom and Connie went outside briefly. The rest of the observation involved lunch in the kitchen.

Episode marking. The stream of behavior is ongoing and continuous. Therefore in order to look more closely at specific aspects of it, the problem of a structural unit as a basis for quantification must be solved. In this study the specimen records have been divided into behavior episodes. A behavior episode is an action of a person together with an immediate and coexisting situation in the life of the person

(Wright, 1967). The boundaries of episodes are discovered, not invented by the investigator (Schoggen & Schoggen, 1968). The process of dividing a specimen record into behavior episodes has been discussed in detail elsewhere (Barker & Wright, 1954; Wright, 1967), but in general every episode has three basic attributes: it has constant direction--all parts of the action in the episode appear to carry the person toward a particular behavioral end; it is within the normal behavior perspective--episodes are among the features of behavior which people see in the ordinary course of living; it has approximately equal potency throughout its course--in no segment of the episode is there evidence that the unidirectional flow of the stream of action toward its behavioral end has stopped or seriously faltered (Wright, 1967).

In this study the episoding procedure was carried out by the investigator and one other person. In the main study all records of the 24 families were divided into episodes and an agreement check was performed on 25 per cent of these. For the agreement check, two workers, using duplicate copies of the record, marked and numbered the episodes. The per cent of agreement was calculated by dividing the total number of episodes in both copies of the record by twice the number of episodes on which the two workers agreed (Barker et al., 1954, p. 271). The ten records selected for this study included two on which agreement checks had been made. The results of the agreement checks were the following:

Table 1

Per Cent of Agreement on Episoding for Two Records

Record	Worker 1 #Eps.	Worker 2 #Eps.	# of Agreements	% of Agreement
12.08	101	110	84	80
21.02	104	138	98	82

These figures indicate that independent workers can agree satisfactorily in using the episoding procedures.

Selection of objects. The specimen records containing detailed accounts of a child's behavior and situation include every object with which the child comes into contact during the period of the observation. However not all these objects qualify as behavior objects because they fail to meet the criteria used for distinguishing behavior objects from other objects that are merely mentioned by the observer. Every behavior object is (1) a commonly discriminated part of the physical-social environment and (2) generally perceived as necessary or appropriate for the transaction of some particular behavior. In addition the object must be a part of the child's psychological habitat, which includes the momentarily changing and directly effective conditions of his behavior. The child is aware of the objects in his psychological habitat and he uses them as essential supports for his molar behavior (Wright, 1967).

Even with these criteria for selection of behavior objects, there is an indefinite line between those objects that enter a subject's psychological habitat and those that do not. For this reason the following practical guides were adopted: the child must look at,

listen to, speak to or about, manipulate, approach, withdraw from or otherwise indicate overtly that the object is inextricably implicated in what he is doing, that it is an essential psychological support for the behavior (Schoggen, 1951). With these guides, objects which are mentioned as part of the background by the observer and objects on the fringes of psychological significance were eliminated.

In the course of a 30-minute specimen record, a child may interact with certain objects a number of times. This fact posed the problem of how many times such objects should be counted.

Three possibilities were considered and compared in a preliminary study. The first possibility was counting and analyzing each object mentioned in a record only once for that record. This method would yield a list of the separate objects used by a child during each observation. Clearly much of the value of the records was left out with this method alone; no measure of the importance of the object in the child's psychological habitat would be made.

A second possibility was to count and analyze an object every time it was mentioned in the record. This posed the problem of difference in reporting by the different observers. Even though the observers had been given the same training in making specimen records, a preliminary study showed that simple differences in wording could produce large discrepancies in the number of objects mentioned in otherwise similar records by different observers. For these reasons, frequency of mention was not chosen as the method of counting objects.

The third possibility was to count and analyze an object every time it occurred except that no object was analyzed more than once in

any one episode. The preliminary study showed that this method was much less subject to differences in styles of reporting of the different observers. In addition, the number of molar episodes in which a behavior object enters the child's psychological habitat appears to be a better measure of its importance than mere frequency of mention which is subject to a variety of influences.

The method of selecting and marking objects was adapted from the work of Schoggen (1951). His investigation devised a number of conventions for dealing with particular problems which arise in the process of this task. Two such conventions which were continued in this study are the following:

1. When the child interacted with two or more objects as though they were a single object, the collective object was analyzed as one object. For example, a child might say, "I want to go play with Mary and Jim." In this case the child is speaking about Mary and Jim together, and they are counted as one collective object.

2. A behavior setting is never counted as a behavior object, regardless of the use to which the subject puts it. The distinction between a setting and an object lies in its relation to the person and his behavior: the behavior of a child occurs <u>around</u> and <u>about</u> an object, such as mother or book, but the behavior pattern lies <u>within</u> a setting, such as living room (Wright, 1967). It is possible that a setting may be used in a way which would normally fit the description of a behavior object, such as when a child says, "Let's go into the living room." However it was decided that, regardless of its use, a setting would never be counted as a behavior object.

Several other general guidelines were formulated in order to make the procedure of selecting objects clearer. These took the form of two main steps:

1. In each episode the investigator should first mark the object which is clearly the most central to the behavior of the subject in that episode. The object should be counted only once in any one episode.

2. The investigator should then identify and mark the other objects in that episode which are important supports for the child's behavior. Every object which appears to be essential for the purposeful behavior of the child must be marked.

In this study the investigator was initially trained in the object selection procedure by the originator of the method. The investigator then selected and marked (by circling the object name) in the record the behavior objects in each of the ten specimen records. An agreement check was carried out on three records to demonstrate that the procedure could be communicated and that independent workers could agree on its application. The two workers agreed on 87 per cent, 84 per cent, and 86 per cent of the 203, 187, and 154 objects marked on the three records. These figures are considered adequate for the above purpose.

Analysis of behavior objects. Each behavior object was counted and analyzed once in each episode in which it occurred. The analysis consisted of applying the eight descriptive categories defined and described below to each object transaction. An object transaction is defined as the occurrence of a particular behavior object in one behavior episode. The eight categories were adapted from those used by

Schoggen (1951). In many cases, the categories, the items within them, and the definitions are exactly as Schoggen described them. As mentioned earlier, however, the subjects and length of observations in this study differ considerably from those studies by Schoggen, so changes have been made in some of the categories. These changes were based on intuitive judgments of the observers who had been most closely connected with the children and their environments and experience in working with earlier records not included in this study. The categories are described below.

I. Social and Non-Social Behavior Objects.

Social behavior objects include all human beings, whether living or dead, fictitious or real. Pets are treated separately and are defined as any tamed animals kept and cared for affectionately. All other behavior objects are placed in the non-social category. Parts of the body which are treated as objects themselves, such as hands, arms, etc., are rated as non-social.

1. Social
2. Pets
3. Non-Social

II. Relation of Social Behavior Objects.

This category classifies social behavior objects according to their most important function vis-a-vis the subject in the particular episode.

0. Not applicable; object was rated 3-Non-social--in Category I.
1. Parent--mother or father of the subject.
2. Other adult relative--aunt or uncle, grandmother or grandfather.
3. Sibling
4. Friend or playmate

5. Other adult, not related to the subject.

6. Observer

7. Baby-sitter or maid.

III. Source of Non-Social Behavior Objects.

This category distinguishes those objects which are generally perceived as being man-made from those which are seen as a part of the natural world.

0. Not applicable; object was rated 1--social--in Category I.

1. Made or processed by man--objects which are fabricated or directly processed by man. Examples: book, shoe, button, bread, money.

2. Natural--objects of nature: those which are generally seen as having existence independently of man's activities. Examples: tree, rocks, flower, hands, legs.

IV. Function of Non-Social Behavior Objects.

This category provides seven classifications of behavior object function. By "behavior object function" is meant the end or purpose which the object is generally seen to further. The seven functions included are widely held to be of importance in child development. Behavior objects have many other functions which are not included here. In marking this category the intention is to deal with only those objects that clearly fall in one of the seven classifications rather than to attempt to classify every behavior object. For this reason, the item "other and ambiguous" is provided for objects which do not clearly belong to one of the seven classifications of function. Function is

judged in accordance with the generally perceived primary function of the object, i.e., by the local dictionary definition, not in terms of the subject's use of the behavior object. Examples of each function are given below.

0. Not applicable; object was rated 1--social--in Category I.
1. Education: text-book, paper, desk.
2. Apparel and Ornamentation: dress, sock, shoe, barrette.
3. Art and Esthetics: drawing, flowers, piano.
4. Nutrition: salad, milk, bread, steak, water, popsicle.
5. Health and Cleanliness: toothbrush, soap, toilet.
6. Recreation: swing, tricycle, comic book, slide, television.
7. Religion: Bible, blessing.
8. Other and Ambiguous: sidewalk, chair, table, hammer, mud, money, plate, spoon.

V. Realism of Behavior Objects.

The four items provided under this category classify objects according to their designed, intended, and generally perceived degree of realism or seriousness.

1. Serious: objects intended for use in the ordinary business-like activities of everyday living. They are the commonplace behavior supports of the workaday world. Examples: shoe, chair, toast, pencil, flower.
2. Game, sport, or play: objects designed for use in connection with a recognized game or sport. Examples: bicycle, swing, wagon, sandpile.

3. Make-believe play: usually small imitations of familiar real things, intended solely for play purpose.. Examples: teddy-bear, doll, toy car, toy guitar, toy gun.
4. Fiction: legendary, hypothetical or fictitious objects which are widely recognized in the culture. They are usually, but not necessarily, characters from literature, drama, radio. or television. Characters from real life whether living or historical are not included under this item. Examples: Mickey Mouse, Alice in Wonderland, Batman.

VI. Object Transaction.

This category classifies some aspects of the behavior transaction with the object. In every case, the investigator records the nature of the specific behavior transaction under one of the items listed below. When two or more items can be marked, the rater makes a judgment as to which one best represents the essential behavior. The items of this category are listed below:

1. looking at
2. looking away from
3. listening to
4. ignoring
5. speaking to
6. speaking about
7. gesturing toward
8. manipulating or touching
9. approaching
10. withdrawing from
11. guiding self re:
12. listening about
13. Other, can not judge. If this rating is made, ratings of 0 are given in categories VII and VIII.

Item 13, "Other," is used for transactions which do not fit any other item. Also, in some cases when the behavior with the object is extensive and complex, the analyst is compelled to mark the object "other" even though several of the items apply. These are cases in which it seems that no one of the items does justice to the behavior. However this item should be used as infrequently as possible. In most episodes a decision can be made about a particular object and the transaction the subject makes which is most essential.

VII. Instigation of Object Transaction.

The question to be answered by the rater in marking this category is, "What brought about this particular behavior transaction?" Objects which are classified as imposed or suggested, items one through five, are objects which are forced upon the child individually or as a group member. These items are restricted to those objects which are actively and directly thrust upon the child during the course of the day. It does not include objects which the child deals with as the result of general or implicit requirements of society. The imposition or suggestion must actually be described in this record. For the sake of agreement in rating, it has been decided that when the child merely responds to a question asked by someone else, the rating is "selected." If the question is extremely forceful in some way, it may be judged "Imposed or Suggested." This carries over to other behavior too; the behavior transaction which was labelled in Category VI must have been actually forced upon the child directly as described in the record. The items are listed below:

0. Can not judge because rating of 13--other--was given in Category VI.
1. Imposed or suggested by child's mother.
2. Imposed or suggested by child's father.
3. Imposed or suggested by another adult.
4. Imposed or suggested by another child.
5. Imposed or suggested by a non-social agent.
6. Selected---objects which the child actively selects from among the vast number of objects which are potentially available to him. He is faced with a number of items, from which may be selected many or few, of this kind or that, depending upon the individual needs and abilities of the person at the time.
7. Created---objects which the child actually creates for himself; objects which, but for the efforts of the child, would not exist. It should be pointed out that this item is appropriate for an object only during the episode in which the child is in the process of creating it. If, at a later time, the same object is referred to, it is not marked "created" but it is marked "selected."

VIII. Uniqueness of Behavior to the Person.

Under this category the analyst compares the child's behavior with the behavior generally perceived as appropriate to the object. The general perception of the behavior appropriate to the object is taken from the dictionary definition of the object. The analyst's judgment as to the degree of congruence between the general perception and the child's behavior is recorded on a four-point scale.

0. Can not judge because rating of 13--other--was given in Category VI.

1. Full Congruence: object used in full accordance with its dictionary definition and in keeping with local mores.

   Examples:

Object:	pencil	Transaction:	"writing with"
	observer		"looked at"

2. Minor Discrepancy: object used in a somewhat unusual way. While not strictly in accordance with the dictionary definition, the subject's behavior with respect to the object is fairly common to this culture.

   Examples:

Object:	thumb	Transaction:	"sucked"
	sofa		"did hand-stand on"

3. Major Discrepancy: object not used in accordance with the local dictionary definition.

   Examples:

Object:	stove	Transaction:	"sat on"
	hairbrush		"poked brother with"

4. Incongruence: subject's behavior contrary to dictionary definition; behavior definitely inappropriate.

   Examples:

Object:	baton	Transaction:	"banged on cement porch"
	Wally L.		"hit with a board"

It will be clear that in marking this category, the analyst has to take into consideration both the position of the object in the life-space of the child and the general perception of the object's behavioral appropriateness. This is the only category where the analyst must try to understand the meaning of the behavior to the subject.

The analysis of the behavior objects was done by the investigator and two assistants. A Rater's Guide was developed by the investigator with detailed instructions about the procedures in rating and complete descriptions of the category items.

The two assistants were trained with verbal instructions and the Rater's Guide and were supervised in the analysis of the first 50 object transactions in record 12.08. All three raters then analyzed the objects in the next 100 transactions, numbers 51 through 150. The per cents of agreement between raters 1 and 2, and 2 and 3, and 1 and 3 were calculated for Categories, VI, VII, and VIII. Categories I through V were merely descriptive. They involved no judgments by the raters and a preliminary check indicated that raters had virtually 100 per cent agreement on these ratings. After the agreement figures were recorded, the three raters discussed areas in which they had had most frequent disagreements in ratings, and some solutions were reached. Then the raters analyzed the remaining 46 transactions and agreements were again calculated. These figures are presented in Table 2 along

with the overall agreement percentages for the 146 transactions in the agreement check for each category.

Table 2

Agreement Percentages on Object Transaction Analysis*

	Object Transactions		
Category VI	51-150	151-196	51-196
Rater 1 & Rater 2	71%	80%	76%
Rater 1 & Rater 3	87%	74%	83%
Rater 2 & Rater 3	73%	70%	72%
Category VII			
Rater 1 & Rater 2	89%	76%	85%
Rater 1 & Rater 3	83%	78%	81%
Rater 2 & Rater 3	81%	72%	78%
Category VIII			
Rater 1 & Rater 2	72%	46%	64%
Rater 1 & Rater 3	79%	59%	73%
Rater 2 & Rater 3	76%	50%	68%

*All object transactions were found in record number 12.0S on Rachel Tweed.

The percentages for Categories VI and VII were considered adequate indication that the analysis procedure had been communicated successfully. The figures for Category VIII were lower than desired. This indicated that the nature of Category VIII is most ambiguous, and that

the four items for rating have not been defined clearly enough for raters to agree satisfactorily on their use. It was also felt by all three raters that the transactions from 151 through 196 were extremely difficult to rate on Category VIII because of the nature of the behavior. If this is so, it may partially explain the very low percentages of agreement in this category for those transactions. Whatever the reason, the borderline level of agreement figures in Category VIII must be taken into account when results for this category are discussed.

The three raters performed the analysis on the transactions in the remaining nine specimen records. Each rater analyzed transactions in a record from each of the three families, so that any bias that may have existed was not concentrated in the records of one child.

Recording of category ratings. The procedure of recording category ratings for each object and its transactions was necessarily tedious and time-consuming. Previously (Schoggen, 1951) ratings had been recorded on data sheets and subsequently punched on cards as part of the Hollerith card coding system. In this study an attempt was made to eliminate the step of recording on data sheets by using the IBM Porta-Punch equipment. With this equipment the rater can punch the numbers of his ratings as well as the identification numbers for the objects directly onto IBM cards as he reads through the records on which the selected objects have already been marked. The IBM Porta-Punch cards are standard size with numbers printed only on the even-numbered columns. The Porta-Punch cards were placed individually in a Porta-Punch Board for punching. The card was covered by a transpar-

template which guided the stylus in punching the perforated numbers. The space around each row symbol is perforated so the number can be punched out with a stylus, leaving a hole which can be read by IBM computer equipment. For the convenience of the analyst, columns to be punched as well as headings for the columns were printed on the Porta-Punch cards by a photographic duplicating process. A sample Porta-Punch card is included in Appendix C.

A data sheet was designed for use while the Porta-Punch equipment was being tried and subsequently ordered. It consisted of the four sets of identifying numbers as well as spaces for recording the ratings for the eight categories. Each sheet contained the data for four object transactions (Appendix B).

Because of delays in the preparation of the order of Porta-Punch cards, data sheets had to be used for analysis of eight of the ten records. However the Porta-Punch equipment was used for direct recording of ratings for two records. Careful comparisons were made of time taken to punch directly onto the cards with time taken to fill out data sheets and then punch the cards. These comparisons along with reports of satisfaction from the raters convinced the investigator that the Porta-Punch system is very satisfactory when used as the analyst works from the records.

On both the data sheet and the IBM cards there were four sets of identifying numbers. They are explained below.

Transaction number: number assigned on the basis of the order in which the transaction occurred in the record. It had no purpose other than that of identification.

Observation number: code number of subject. The first two digits identified the family; the last two were the number of the observation.

Episode number: number of the episode in which the object transaction occurred.

Object number: the identifying number of the behavior object. The mechanics of assigning a behavior object a number were as follows: two files, one alphabetical and the other sequential were set up. Duplicate cards, showing the name, object number, and transaction number of the objects, were placed in these files for each different object transaction. In completing the data sheets or cards, the rater first consulted the alphabetical file to see if the object in question had occurred in a previous transaction. If so, the previously assigned number was recorded on the data sheet and the new transaction number was listed on the alphabetical card beneath the number of the transaction where the object had first occurred. If the object had not occurred earlier, the investigator assigned a new object number. Object numbers were constant through all the observations for a given family; that is, each family had a separate alphabetical file in which the objects from all observations were combined. Complete lists of the behavior objects for the three families appear in Appendix D.

The punched IBM cards were duplicated and the duplicate set used for computer operations which yielded frequency counts for the items in each category and accompanying percentages of the total number of transactions.

Results and Discussion

Frequencies and Rates of Occurrence of Behavior Objects and Object Transactions.

Data on the number of episodes, behavior objects, and object transactions, and their respective rates of occurrence for the subjects in this study are presented in Table 3. In addition the lower part of the table shows similar data for three seven-and eight-year-old children reported by Barker and Wright (1954). Actual frequencies of episodes, behavior objects and object transactions, columns 2, 3, and 4, cannot be compared for the two groups of children because the Midwest records covered day-long observations. However, the rates of occurrence are comparable and show some interesting differences in the behavior of three- and eight-year-old children, some of which will be discussed below.

In column 3, it can be seen that Connie Roper dealt with a larger number of different objects than Owen Culster or Rachel Tweed. This is partially explained by a high frequency of collective behavior objects made up of different combinations of people. Many people were present in two of the Roper observations. When the subject utilizes a group of people or things collectively, they are counted together as a single, collective, object, and are tabulated as a different object from each person or thing taken singly. Connie Roper's records included a large number of different social objects (39 compared to 18 for Culster and 9 for Tweed), and 46 per cent of these were collective objects, compared to 33 per cent of both the Tweed and Culster social objects. The large number of collective social objects thus increased the total number of different behavior objects for this child.

Table 3

Frequencies and Rates of Occurrence of Behavior Objects and Object Transactions

	1	2	3	4	5	6	7	8	9	10
	No. of Minutes	No. of Episodes	No. of Diff. Objects	No. of Trans.	Epis. per Min.	Obj. per Min.	Trans. per Min.	Obj. per Epis.	Trans. per Epis.	Trans. per Obj.
Rachel Tweed	88	267	121	474	3.03	1.4	5.39	0.4	1.77	3.9
Owen Culster	87	372	152	627	4.29	1.7	7.20	0.4	1.68	4.1
Connie Roper	92	325	197	665	3.53	2.1	7.23	0.6	2.05	3.4
Mary	870	920	571	1882	1.06	1.5	2.16	0.6	2.04	3.3
Raymond	813	1000	671	2282	1.23	1.2	2.81	0.7	2.28	3.4
Bobby	777	683	749	2490	0.87	1.0	3.20	1.1	3.64	3.3

Some of the different behavior objects were used by the child many times, and some only once. Previously an object transaction was defined as the occurrence of a particular behavior object in a single behavior episode. The total number of object transactions provides, therefore, one measure of the rate of flow of behavior objects through a child's psychological habitat. Column 4 in Table 3 presents these totals and shows that the flow of objects for Rachel Tweed was substantially slower than that for Owen Culster and Connie Roper.

The number of object transactions by a child with a particular behavior object gives one measure of the psychological importance of that object to the child. In Appendixes D and E the different behavior objects encountered by the three young subjects are presented in two different ways. In Appendix D the objects are listed alphabetically and the number of transactions in each specimen record is given for each object. In Appendix E the objects are listed in order of total of frequency of transactions across all observations.

These lists of behavior objects provide some interesting information about the three children. The most obvious and not unexpected finding is that the mother and siblings are quite important to all three children, as shown ay the fact that they have the highest numbers of transactions. Mrs. Tweed entered Rachel's psychological habitat in 34 per cent of the 267 episodes in the observations, and Mrs. Culster entered 31.2 per cent of the 372 episodes in the observations of Owen. This is not surprising since both Rachel and Owen were always inside the homes in all three observations. In addition,

the limited physical space in both the Culster apartment and the Tweed house made it necessary for the people present to be physically near each other most of the time. This increased the probability that some sort of interaction among them would occur. In the Roper observations, Phil entered more episodes (27 per cent of the 325) than any other single object, social or non-social, indicating his great importance to Connie. The mother was next on the list, occurring in 17 per cent of the 325 episodes. The lower frequency of the mother as an object for this child probably can be accounted for in terms of characteristics of this family and the home. There were ten Roper children, and in two of the three observations most of these children, plus several neighborhood friends, were present. This, along with the fact that Connie was free to and did spend time in the spacious yard as well as in the large, roomy house, meant that Connie had a great deal of choice about where she wanted to be as well as with whom she would interact. It was easy for her to be free from her mother's surveillance.

In column 5 of Table 3 are the rates of occurrence of episodes per minute. Of the three-year-olds, Rachel Tweed had the lowest rate, showing that she engaged in fewer goal-directed actions, each of which was longer in duration than those of the other subjects. It is important to note that the pattern of a smaller number of episodes per minute was also true of the older subjects.

Related to the rate of episodes per minute is the number of transactions per minute, since the number of transactions in a record is at least partially determined by the number of episodes. In

column 7 the figures indicate the same pattern as was seen in the rate of episodes per minute: older subjects have lower rates of transactions per minute, and Rachel Tweed has the lowest rate of the three-year-old subjects. The pattern of rates of episodes and transactions is consistent with the frequently reported finding that younger children exhibit higher rates of activity as well as shorter attention spans for individual tasks than older children.

This similarity in rate of flow of objects and rate of episodes and transactions per minute between Rachel and the older group of subjects might suggest that Rachel was more mature than either Owen or Connie. Although this may be partly true, it is also possible that the combination of an impoverished environment and a mother who kept close watch over her children restrained Rachel's behavior in a way which only becomes apparent when these rates of behavior are compared. Owen Culster may have had as few objects in his home as Rachel Tweed, but his mother had little success in controlling her children's behavior and seldom maintained order in her household. Connie Roper was one of many children in a home where there were many objects available. Therefore both Owen and Connie, although for different reasons, lived in environments which provided opportunity for higher rates of behavior and faster flow of objects than were possible for Rachel Tweed.

When episodes are long in duration, the child probably interacts with a larger number of different objects and therefore has a greater number of object transactions within each episode than when there are

short episodes. In columns 8 and 9 the rates of different objects per episode and number of transactions per episode confirm this suggestion with higher rates in both categories for older subjects. The slightly higher rates for Connie Roper than for the other three-year-olds may reflect the greater number of behavior objects which were a part of her psychological habitat.

In column 6, the number of different objects per minute is given for each child. The figures are very similar for the children of both age groups. It is possible that the slightly higher rates for the three-year-olds reflect the praviously-mentioned greater activity rate. In addition, Connie Roper's distinctly higher rate probably reflects the greater number of different behavior objects appearing in her records. This fits the expectation that higher income families provide more material things for their children and that children in such families use more different supports for their behavior than children from low-income families. A child who has fewer different objects in his environment is likely to transact more behavior with each object. The figures in column 10 show that both Rachel Tweed and Owen Culster, the subjects from low-income homes, had higher rates of transactions per object than either Connie Roper or the older subjects, all of whom were from middle-income homes.

These differences are not large, and they are based on a small number of subjects, but they are substantial enough to suggest patterns which are worthy of further investigation with more subjects.

Qualitative Characteristics of Behavior Objects and Object Transactions.

Results of the analysis of the behavior objects and object transactions in all the records on each subject have been combined and will be discussed below. The complete set of data with frequencies and percentages in every category for each observation is presented in Appendix G.

In Table 4, data on the frequencies and percentages of social and non-social behavior objects are presented, based on Category I, Social and Non-Social Behavior Objects. The number of different behavior objects which were social, non-social, and pets can be compared to the number of transactions with each type of behavior object. Rachel Tweed transacted 50 per cent of her behavior in these observations with social objects which made up only 8 per cent of all the different behavior objects. Similarly, 52 per cent of Owen Culster's transactions were with social objects which comprised 12 per cent of the total number of different objects. For Connie Roper, nearly 50 per cent of the transactions were with social objects, but these social objects made up 20 per cent of the total number of behavior objects. This difference again reflects the greater number of social objects available to Connie. It is worthy of note, however, that for all three children approximately half the transactions were with social objects and half with non-social objects. The differences in importance to the child of the types of behavior objects is reflected in the rate of transactions per object. For Owen Culster and Rachel Tweed the rate for social objects is substantially higher than that

Table 4

Frequencies and Percentages of Occurrence of Behavior Objects and Object Transactions With Social Behavior Objects Non-Social Behavior Objects, and Pets

	Tweed					Culster					Roper				
	Diff.Beh. Obj.		Obj.Trans.		Trans. per Obj.	Diff.Beh. Obj.		Obj.Trans.		Trans. per Obj.	Diff.Beh. Obj.		Obj.Trans.		Trans. per Obj.
	f	%	f	%		f	%	f	%		f	%	f	%	
Social	9	8.0	240	50.6	26.6	18	12.0	328	52.3	18.2	39	20.0	312	46.9	8.0
Pets	0	0.0	0	0.0	0	0	0.0	0	0.0	0	4	2.0	29	4.4	7.2
Non-Social	109	92.0	223	47.0	2.4	132	88.0	298	47.5	2.3	158	82.0	324	48.7	2.1
Total	118	100.0	463	97.6	3.9	150	100.0	626	99.8	4.1	201	104.0	665	100.0	3.3

for non-social objects. For Connie Roper, there are still more transactions with each social object than with each non-social object, but the difference is much smaller. The data from Connie's records closely resemble those from the records of the three older subjects. In general for the older children, 45 per cent of the total transactions were with social objects which made up 18 per cent of the total number of different objects. This indicates that there were more social objects for these children, probably because the observations included several hours of behavior in school as well as behavior at home during an entire day. There were approximately eight transactions with each social object and two transactions with each non-social object for the eight-year-olds. These figures reflect the importance that social objects had for the children: there were far fewer people than things encountered by the children, but four times as much behavior was transacted with each person as with each material thing.

In Table 5, frequencies and percentages of the transactions with social behavior objects are presented according to Category II, Relation of Social Behavior Objects. For each subject nearly half of the object transactions with social objects occurred with siblings. For Owen Culster and Rachel Tweed, most of the other transactions with social objects were with parents. Connie Roper, however, had as many transactions with children outside her family as with her mother. (Her father was not present in any of the observations.)

Table 5

Frequencies and Percentages of Object Transactions With Social Objects According to Their Relation to the Subject

	Tweed		Culster		Roper	
	f	%	f	%	f	%
Parent	96	40.0	149	45.3	59	18.7
Other adult relation	0	0.0	2	0.6	0	0.0
Sibling	120	50.0	138	42.0	181	57.4
Friend or playmate	0	0.0	1	0.4	60	19.0
Other adult, not related	0	0.0	5	1.5	0	0.0
Observer	24	10.0	34	10.3	15	4.9
Baby-sitter or maid	0	0.0	0	0.0	0	0.0
Total	240	100.0	329	100.1	315	100.0

The earlier study of behavior objects by Schoggen (1951) used somewhat different categories for classifying the social behavior objects. However, the percentage of transactions with social objects which were with the parents can be compared with the same figures from the first item on Table 5. For the older subjects, approximately 13 per cent of the object transactions with social objects were with their parents. This is similar to the percentage of transactions with parents in the observations of Connie Roper, and probably reflects the greater number of people in the environments of these children and Connie as compared with those of Rachel Tweed and Owen Culster.

In Table 6 the transactions with non-social behavior objects have been classified according to Category III, Source of Non-Social Behavior Objects. Transactions with behavior objects which are parts of the natural world, e.g., flowers, trees, grass, occurred more frequently in the records on Connie Roper, who was from the urban middle

Table 6

Frequencies and Percentages of Transactions With Non-Social Behavior Objects From Two Sources

	Tweed		Culster		Roper	
	f	%	f	%	f	%
Made or Processed by man	205	87.6	275	92.3	252	71.6
Natural	29	12.4	22	7.5	96	27.4
Total	234	100.0	297	99.8	348	99.0

income sample. It might be expected that children in rural areas (such as Rachel Tweed), or children from low income families (Rachel Tweed and Owen Culster) would have higher numbers of transactions with natural objects because of a more readily accessible supply of natural objects for rural children or a lack of man-made objects for deprived children. The most obvious reason for the higher number of transactions with natural objects in the Roper records undoubtedly is that these were the only records in which the child spent much time outside the house. Excluding certain food items, natural objects usually would be found outside. This shows the obvious influence of the behavior setting on the results of these analyses. In the day long records of the Midwest children, the observers followed each child both inside the house and outside, and a substantial percentage of the transactions with non-social behavior objects (12 per cent, 21, per cent, and 23 per cent) were with natural objects.

Table 7 shows the results of classifying the non-social behavior objects according to the seven functions in Category IV, Function of

Non-Social Behavior Objects. The functions listed were taken directly

Table 7

Frequencies and Percentages of Transactions With Non-Social Behavior Objects Classified According to Function

	Tweed		Culster		Roper	
	f	%	f	%	f	%
Education	1	0.4	2	0.8	0	0.0
Apparel and ornamentation	37	15.8	35	11.7	11	3.1
Art and esthetics	10	4.3	8	2.6	4	1.1
Nutrition	12	5.1	41	13.7	107	30.4
Health and cleanliness	4	1.7	10	3.3	10	2.9
Recreation	72	30.8	72	23.8	21	5.9
Religion	0	0.0	1	0.4	0	0.0
Other and ambiguous	96	41.0	128	42.9	167	47.4
Total	232	99.1	297	99.2	320	90.8

from Schoggen's (1951) study, where they were described as being those generally thought to be of importance in child development in American culture. The items in the category made some interesting distinctions among the families. For example, Rachel Tweed used objects of apparel in five times as many transactions with non-social objects as did Connie Roper. However Connie Roper used nutrition objects six times as often as Rachel Tweed and more than twice as often as Owen Culster. This reflects the fact that Connie was observed in mealtime settings more frequently than either of the other two subjects. Transactions with recreational objects were four and five times as frequent in the Culster and Tweed observations as in the Roper records. This may have been due to the fact that Owen and Rachel were at play during most of the observation time and that they had fewer people interacting with them

than Connie did. These differences should be further explored with the rest of the records of three-year-old subjects. The seven functions in this category did not differentiate among almost half of the non-social objects; 41 per cent of the non-social objects for Tweed, 43 per cent for Culster, and 47 per cent for Roper were classified "Other and Ambiguous." Therefore it would be useful to add new items, such as Household Supports (furniture, utensils), to make further distinctions among the non-social object transactions.

Table 8 classifies the behavior objects used in the transactions according to the items in Category V, Realism of Behavior Objects. In considering these results, it is important to realize that persons and

Table 8

Frequencies and Percentages of Transactions With Behavior Objects Classified According To Realism

	Tweed		Culster		Roper	
	f	%	f	%	f	%
Serious	412	86.9	608	97.5	661	99.4
Game, sport, or play	1	0.2	1	0.2	2	0.3
Make-believe play	60	12.7	13	2.1	3	0.5
Fiction	0	0.0	1	0.2	0	0.0
Total	473	99.8	623	100.0	666	100.2

animals are, by definition, always classified as "serious" objects. However it is clear that all three children dealt with serious objects in most of their transactions. Rachel Tweed used make-believe objects in 12 per cent of her transactions. There were toy cars and a toy guitar, which were small imitations of "real" objects. It is striking

that there are almost no objects intended for play other than Rachel's toys. When this is the case, it would be expected that young children would create imaginary play objects. Since there were virtually no "fiction" objects for any of the children, and since all three children participated in play activities during the observation, it is probable that Owen Culster and Connie Roper adapted serious objects to play purposes.

In Table 9 the frequencies and percentages of object transactions are presented according to the items in Category VI, Object Transaction. For Rachel Tweed and Owen Culster "manipulating and touching" and

Table 9

Frequencies and Percentages of Different Types of Object Transactions

	Tweed		Culster		Roper	
	f	%	f	%	f	%
Looking at	137	28.9	234	37.3	139	20.9
Looking away from	0	0.0	0	0.0	1	0.2
Listening to	33	7.0	34	5.4	50	7.5
Ignoring	14	3.0	11	1.8	8	1.2
Speaking to	32	6.8	51	0.8	112	16.8
Speaking about	11	2.3	19	3.0	131	19.7
Gesturing toward	12	2.5	22	3.5	6	0.9
Manipulating or touching	157	33.1	183	29.2	124	18.6
Approaching	10	2.1	9	1.4	16	2.4
Withdrawing from	8	1.7	2	0.3	1	0.2
Guiding self re:	30	6.3	23	3.7	30	4.5
Listening about	24	5.1	32	5.1	43	6.5
Other, can not judge	6	1.3	5	0.8	5	0.8
Total	474	100.0	625	92.3	666	100.2

"looking at" substantially outranked any other way of transacting behavior with an object. Connie Roper's most frequent transactions,

however, are almost evenly divided among "looking at," "speaking to," "speaking about," and "manipulating or touching." The differences become clearer when the transactions are grouped. Those which can be classified as involving verbal behavior (listening to, speaking to, speaking about, and listening about) made up 21 per cent and 22 per cent of the total number of transactions for Rachel Tweed and Owen Culster, respectively, but 50 per cent of the transactions for Connie Roper. On the other hand, transactions involving motor behavior (gesturing toward, manipulating or touching, approaching, and guiding self re:) comprised 46 per cent and 38 per cent of the total number of transactions for Rachel and Owen, respectively, but only 26 per cent of the transactions for Connie. Perceptual transactions without any other interaction (looking at, listening to, and listening about) comprised 43 per cent of Rachel's transactions and 48 per cent of Owen's, but only 35 per cent of Connie's transactions. This suggests that Connie did not often use only the perceptual mode of behavior; she probably relied more heavily on verbal exchange or combinations of behavior transactions. These findings are consistent with differences between lower and upper income families which often have been proposed, namely, that middle income (middle and upper-middle class) families utilize predominantly the verbal mode of interaction while lower income (lower class) families tend to express themselves more frequently by means of gestures and physical movements.

The raters found that there were two types of transactions that were not covered by these items. In the first, "smiling at" or "laughing

at" did not seem to fit sensibly into any one classification, it was usually put reluctantly into "looking at," "gesturing toward," or "speaking to." In the second type of behavior that did not fit, the subject allowed another person to handle or manipulate him in some way. One example of this was seen when Connie stopped all other activity to permit the mother to remove her sweater for her. Connie's purpose was clearly to let this happen, but the nature of the transaction with the mother was difficult to classify. Another example occurred when Rachel sat absolutely still and purposely did not react when another child hit her. The transaction with the other child was clearly more than "ignoring;" the subject was almost challenging the other child by indicating, "You can't hurt me!" In further studies this category will be expanded to include these types of transactions.

Table 10 classifies the object transactions according to Category

Table 10

Frequencies and Percentages of Object Transactions Which Were Imposed, Selected and Created

	Tweed		Culster		Kaper	
	f	%	f	%	f	%
Can not judge	6	1.3	5	0.8	7	1.1
Imposed or suggested by child's mother	62	13.1	84	13.4	58	8.7
Imposed or suggested by child's father	0	0.0	0	0.0	0	0.0
Imposed or suggested by another adult	2	0.4	1	0.2	0	0.0
Imposed or suggested by another child	25	5.3	32	5.1	118	17.7
Imposed or suggested by a non-social agent	1	0.2	1	0.2	3	0.5
Selected	377	79.5	502	80.1	478	71.9
Created	0	0.0	0	0.0	0	0.0
Total	473	99.8	625	99.8	664	99.9

VI, Instigation of Object Transactions. This category was expanded from its original form (Schoggen, 1951) to differentiate the agents when the transaction was classified "imposed or suggested." All the "imposed" items were unnecessary for this study since the father was present in the observations of only one family, and there were no other adults present. For these three subjects, a large majority of all the transactions were freely selected by the child. In general the large percentage of "selected" object transactions indicates that the subjects were free to choose their own behavior supports and that their behavior transactions with objects were seldom coerced.

Table 11 presents the results of Category VIII, Uniqueness of Behavior to the Person. The results of this classification must be

Table 11

Frequencies and Percentages of Object Transactions Classified According to Uniqueness of Behavior

	Tweed		Culster		Roper	
	f	%	f	%	f	%
Can not judge	7	1.5	6	1.0	7	1.1
Full congruence	292	61.6	438	70.0	543	81.7
Minor discrepancy	126	26.6	148	23.6	104	15.6
Major discrepancy	35	7.4	35	5.6	8	1.2
Incongruence	14	3.0	0	0.0	5	0.8
Total	474	100.1	627	100.2	667	100.4

considered with caution because the raters had an inadequate level of agreement in making these ratings. They felt that when an object was not used entirely appropriately by the child it was difficult to make the distinction between a minor and major discrepancy and therefore

they were not consistent in these ratings. In further uses of this category more specific criteria will have to be provided for each of the items of classification. Connie Roper most frequently (82 per cent of the transactions) used objects according to their intended purposes. For both Rachel Tweed and Owen Culster between 30 and 38 per cent of the transactions were inappropriate for the objects involved to some degree. It is possible that this difference is related to social class. Middle-class children (such as Connie Roper) presumably have more objects which are appropriate for children and they use them correctly. Lower-class children are thought to have fewer objects and to use them in inappropriate ways. However this finding should be supported by the data for Category V, which describes the objects according to their intended degree of seriousness. In the discussion of that category it was stated that since there was a very low proportion of play, make-believe, and fiction objects for Connie Roper and Owen Culster, they probably adapted serious objects to play purposes. If the serious objects were used for play, the transactions probably should have been judged as inappropriate for the intended purpose of the objects and classified in Category VIII as a discrepancy or incongruence. Therefore it would be expected that on the basis of Category V, Owen Culster and Connie Roper would have more ratings of discrepancy than Rachel Tweed. Since this was not the case it is likely that inconsistencies in rating, especially on Category VIII, have influenced the results.

Summary

This study attempted to provide empirical data which could be used to describe differences in home environments and behavior of three young children from deprived and non-deprived homes. The study took the form of an investigation of the behavior objects of three-year-old children from urban and rural low-income and urban middle-income homes. Behavior objects are the things and people in the environment which the child uses as essential supports for his molar behavior. Behavior objects were identified in three or four specimen records covering approximately 90 minutes of observation of each child in his home. Specific criteria were used for identifying the behavior objects in the specimen records, and the objects were described according to eight descriptive categories. The investigation yielded two kinds of results: 1) Frequencies and rates of occurrence of behavior objects and object transactions. An object transaction was defined as the occurrence of a particular behavior object in one unit of goal-directed molar behavior, or behavior episode. The total number of object transactions gives an indication of the rate of flow of behavior objects through the psychological habitat of the child. The rates of occurrence of different objects and object transactions per minute and per episode indicate the rate and complexity of behavior for the child. A measure of the importance of each object to the child is provided by the number of object transactions with each different behavior object. 2) Classification of behavior objects and object transactions. The behavior objects and object transactions were described according to

eight categories and the results were presented and discussed. The data on the measures described above were compared among the three-year-old children in order to identify differences in the home environments which might be related to amount of deprivation. Some age comparisons were made between the three-year-old subjects of this study and three eight-year-olds from an earlier study. The interpretations of the results reported in this paper are generally suggestive rather than conclusive, but they have shown that there are differences in types of behavior objects and object transactions in these families. The psychological supports for behavior vary among young children and their effects appear to be different in families at different economic levels. In this study, children from lower economic homes as compared to the middle-income home:

1. dealt with fewer different objects;
2. transacted more behavior with their mothers;
3. were provided with fewer nutritional objects;
4. exhibited less verbal behavior;
5. exhibited more motor behavior; and
6. used objects according to their intended purposes less often.

Suggestions for Further Study

Several revisions of the descriptive categories for classification of behavior objects and object transactions have been suggested in the above discussion. These will provide useful distinctions not made in this study. However the investigator and the raters felt that a great deal of information about the objects and the behavior of the children with reference to them was not covered in any way by the present categories. Two suggestions have been made about additional types of analysis.

The first of these is an additional category or categories which would classify the importance of the behavior object in the transaction of behavior in an episode. This category would differentiate the objects a child used as main supports for his behavior from those which were of secondary importance to him.

The second suggestion deals with the interrelating of the descriptive categories. In this way the different kinds of objects, as described in Categories I through V, would be compared with the kinds of behavior the child transacted with the objects. For example, this analysis could tell us how frequently objects classified as "serious" were used in other than serious ways, e.g., for play. Such analyses hold great potential for enriching the findings of this research.

The purpose of this investigation was in part, methodological. It was necessary to determine whether the technique of analysis of behavior objects could be applied to records of young children from families at different economic levels. Because the method did prove

useful in differentiating characteristics among three young children, the coverage will be extended to more subjects in the same population groups so that greater confidence can be placed in the differences which are found.

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APPENDIXES

APPENDIX A

REVIEW OF THE LITERATURE

Cultural Deprivation As A Research Subject.

Cultural deprivation has been the subject of much research and discussion in recent years. Some descriptions of the "culturally deprived" have been given, including in general the behavioral characteristics attributed to this group of the consequences of deprivation on the lives of people from impoverished areas. These include the high rate of school dropouts and delinquents, the tendency of deprived children to be mentally restricted because of lack of educational and cultural experiences, and the frequent occurrence of children with cumulative deficiences caused by a lack of skills prerequisite to successful school achievement (Frost & Hawkes, 1966).

Culturally Deprived Children In the Schools.

The obvious high rate of school failure of deprived children has led to investigation of the factors which prevent such children from responding successfully to the public school experience. It is clear that children do not come to school equally prepared for the learning tasks of first grade (Bloom, Davis, & Hess, 1965). Research shows that deprived children are poorly prepared to produce what the schools demand (Deutsch, 1963). Therefore initial failures are almost inevitable and there are likely to be many frustrations and disappointments for these children (Bloom et. al., 1965). Part of the reason for these failures comes from a lack of readiness on the part of these children to function in the school situation. As one study found,

> The prior satisfaction of the so-called basic needs is necessary before human beings can become concerned with and perform higher-level functions. With children, the adequate satisfaction of nutritional needs and the need for sleep and rest heightens the

> probability of their being able to perform competently in school situations. Adequate living conditions, clothing, exercise, and the availability of medical care--all contribute to the heightened probability of increased capability in school situations (Bloom et al., 1965, p. 8).

In the case of deprived children it is likely that such needs have not been met satisfactorily.

In addition to factors connected with basic health needs, deprived children from restrictive environments are likely to behave and respond in ways that are foreign to the expectations of the schools. Deutsch (1966) states the problem clearly:

> It is not simply that the children lack skills--there is an incongruity between the skills that the children have and the kinds of skills that the school demands. And the school cannot appropriately use and functionally attach the skills of the children to it (p. 146).

McCandless (1967, pp. 586-593) has listed thirteen principles of middle-class value or belief and looked at them from the point of view of the child from a lower-class family. This description makes clearer the wide differences in values that exist and which often may cause conflict and failure for a lower-class child in middle-class oriented schools. The thirteen principles are summarized as follows:

1. God and religion: There is often a religious gap between the middle-class teacher who is likely to belong to the Episcopalian, Methodist, Presbyterian, Baptist, or Jewish church and the lower-class student whose family belongs to one of the fundamentalist Protestant sects of the Roman Catholic Church or may not attend church at all.

2. Cleanliness: Lower-class children come typically from large families who live in homes with cold water or no running water at all.

In such circumstances there is much competition for the amount of water available, and mothers are often too busy to spend time scrubbing children or their clothes. Thus cleanliness becomes a luxury which such families can hardly afford and must do without, and so it becomes regulated to a low place in their hierarchy of values.

3. Thrift: "One must have money to save money, and one must have a faith in the dependability of the future if one is to plan for it." This is not the typical case of the lower-class child and his family. Such a child learns that the supply of almost everything is limited, and his way to survive is to take what he can when it is available.

4. Putting reason before emotion: The lower-class child has no opportunity to learn such a value. In his experience, "Reasoning breeds delay of action and serves to reduce the intensity of behavior," thus making it hard for him to survive "in the tooth-and-claw existence which for him is almost routine." Hence, he not only does not share his middle-class teacher's value but holds one opposite to it.

5. Strong emotion, particularly sexual and aggressive emotion, should not be manifested: "When one is battling for survival, intense emotion facilitiates and spurs action."

6. Socially acceptable expression of agression: This makes little sense to the lower-class child. "He has not seen people, his parents or his peers, behave in such a fashion."

7. Repression of sex: Persons from the lower social classes are freer and more social in their expression of sex, including talking

about as well as indulging in sex. "Lower-class children, partly because of their living arrangements, live openly with sex to a degree that is inconceivable in a middle-class family. What is sacred and taboo for the middle-class teacher in the area of sex may be a matter of indulgence and free expression for the lower-class child. Hence, the child may pose a distinct threat to the controlled and perhaps inhibited teacher."

8. Distaste for filthy talk, "impure" accents, and messy grammar: The lower-class child shares little of this with his middle-class teacher. He is "interested only in communication, not in form."

9. Disdain for overindulgence in alcohol: "To people from the lower class, alcohol and sex often afford the only available, albeit transitory, escapes from an all too grim reality."

10. Honesty: "Although the two classes may not be so far apart in endorsing honesty as they are in endorsing other values, there are genuine differences in drive, and probably in practice."

11. Hard work and self-discipline result in success: The lower-class child does not see evidence for such a belief in the experiences of the adults near him who work hard doing such things as swinging a pick, and yet remain day laborers with very little security throughout their lives. "Our society is not organized to demonstrate to the lower-class child the virtues of hard work and self-discipline; but his failure to appreciate these virtues leave him, psychologically, far removed from his middle-class teacher."

12. Doing one's duty and living up to the expectations of others: There is nothing in the lower-class child's learning to convince him that such behavior pays off favorably.

13. Learning for the sake of learning: Such intellectual satisfactions are not available in most lower-class homes, and do not help the child in the business of day-to-day survival. "In addition, higher education, which might prepare the child for an 'easy' job, is out of the question for practical reasons."

Of these thirteen values, in only two (religion and honesty) is there less than complete divergence between the lower and middle class attitudes. This lack of shared values results in poor communication and lack of effort to understand each other. "The failure of teachers to understand such youngsters probably retards the education of at least one fourth of a nation, and is certainly related to one of our most serious educational problems."

The Need To Investigate The Home Environment.

In order to further understand the behavioral characteristics of deprived school-age children and prepare for adjustments within the school situation, it is obvious that the lives of these children prior to their entrance in first grade must be examined. Bloom (1965) says "the roots of their problem may in large part be traced to their experiences in homes which do not transmit the cultural patterns necessary for the types of learning characteristic of the schools and the larger society (p. 4)." Studies repeatedly show that the home is the single most important influence on the intellectual and emotional

development of children, particularly in the preschool years (Bloom et al., 1965). Bloom found that the first few years of life, spent in the home, are of tremendous importance for all that follows. "Change in many characteristics becomes more and more difficult with increasing age and only the most powerful environmental conditions are likely to produce significant changes at later stages of life (Bloom et al., 1965, p. 85)." It is factors in the home, such as the amount of parental interest in learning, the objects in the house, and the encouragement the child is given in conversation and general learning which have been found to be significant influences on the language and cognitive development, development of interest in learning, attention span, and motivation of the child (Bloom et al., 1965).

Importance of Child-Environment Interaction to Developmental Processes.

Research as proved that the interaction between a child and his environment is crucial to the intellectual and perceptual development of the child. The very young child begins to perceive aspects of the world around him, and perceptual development takes place through the sensory modalities such as vision, hearing, touch, and even taste and smell.

> Perceptual development is stimulated by environments which are rich in the range of experiences available; which make use of games, toys, and many objects for manipulation; and in which there is frequent interaction between the child and adults at meals, playtimes, and throughout the day. At the beginning of first grade there are differences between culturally deprived and culturally advantaged children in the amount and variety of experiences they have had and in their perceptual development. The typical middle-class home provides a very complex environment for the child's early pereeptual development, and this gives these children some advantage in the early years of school (Bloom et al., 1965, p. 13).

In a more theoretical framework, Piaget also points out the importance of constant interaction between the child and his environment in the developmental process. A number of principles relevant to the understanding of the educative process come from Piaget's work:

> (1) The persistence of action sequences which form a cognitive structure (schemata for the child depends upon opportunity for use.
> (2) There is continuous development through use and stimulation.
> (3) Accommodation by the child depends upon a proper match between existing mental structure (schemata) and objects encountered.
> (4) The greater the variety of situations to which the child must accommodate his behavioral structures, the more differentiated and mobile they become, the more rapid is his rate of intellectual development, and the greater is his range of interest in new ideas and experiences.
> (5) Gradual change occurs in mental structures as a result of the continuous interaction of the child and his environment.
> (6) The rate of development appears to be the result of a variety of stimulations during infancy and early childhood (Frost et al., 1966, p. 7).

In line with studies on intellectual and perceptual development is the research on the heredity versus environment controversy as regards the I.Q. In the past, differences in children's I.Q. were attributed largely to native endowment; very little of the variation was attributed to the effects of environment. More recent research has shown that for children growing up under adverse circumstances the I.Q. may be depressed by a significant amount (Bloom et al., 1965). The young child in an impoverished environment generally lives under crowded conditions and in situations which "can act to deter his intellectual development by presenting him with such a constricted encounter with the world that his innate potential is barely tapped (Pettigrew, 1966, p. 114)."

References for this section include those listed in the previous list of references plus the following:

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APPENDIX B

SAMPLE DATA SHEET

Category	Column
Trans. No.	1-4 ____ ____ ____ ____
Observ. No.	5-8 ____ ____ ____ ____
Epis. No.	9-11 ____ ____ ____
Obj. No.	12-14 ____ ____ ____
I. Soc-NS	15 ____
II. Relat. S.	16 ____
III. Source NS	17 ____
IV. Funct. NS	18 ____
V. Realism	19 ____
VI. Obj. Trans.	20-21 ____ ____
VII. Instig.	22 ____
VIII. Uniq.	23 ____

APPENDIX C

SAMPLE IBM PORTA-PUNCH CARD

APPENDIX D

ALPHABETICAL LISTS OF BEHAVIOR OBJECTS WITH THE NUMBER OF TRANSACTIONS

Alphabetical List of Behavior Objects With Number of Object Transactions (f)

Tweed

Object No.	Title	12.01	12.02	12.08	Total
89	Ashtray, unspecified	0	0	2	2
43	Baked beans, on own plate	0	0	1	1
93	Basket, in which toys are kept, laundry, large	0	7	0	7
87	Beds, bunk	0	0	1	1
23	Bed, bunk, end part of frame	1	0	1	2
112	Bedspread, on unspecified bed	0	1	0	1
63	Belt, unspecified (1)	0	0	1	1
13	Belt, man's (2)	3	0	0	3
48	Boots, both, own, white leather	0	0	4	4
58	Boot, white leather, right, own	0	0	3	3
59	Boot, white leather, left, own	0	0	3	3
21	Boot, toy, plastic, small, red	2	7	0	9
15	Boot, right, Robert's	1	0	0	1
64	Boots, both, Robert's	0	0	1	1
81	Cabinet, next to washing machine, in kitchen	0	0	1	1
36	Car, black, plastic	1	0	0	1
33	Car, blue, plastic	1	0	0	1
35	Car, brown, plastic	1	0	0	1
34	Car, yellow, plastic	1	0	0	1
38	Car, Randy's with motor	2	0	0	2
37	Car, Robert's	2	5	0	7
31	Cars, Rachel's four (blue, black, brown, yellow) with toy garage	2	0	0	2
70	Ceiling, of living room	0	0	1	1
29	Chair, by kitchen table	1	0	0	1
71	Chair, overstuffed, armchair, near television and bedroom door	0	0	3	3
4	Chair, overstuffed, rocking, old	1	0	0	1
1	Chair, child-size, green, folding	1	0	2	3
79	Chest, cedar	0	0	1	1
69	Clothes, hanging in closet in bedroom	0	0	1	1
76	Comb, unspecified	0	0	2	2
30	Couch, in living room	1	1	1	3
27	Cracker, one piece (1)	1	0	0	1
28	Cracker, one piece (2)	1	0	0	1
41	Cracker (1)	0	0	1	1
54	Crackers, few from package, own	0	0	4	4
74	Crackers, package of, on table	0	0	1	1
67	Crackers, Robert's	0	0	1	1

Tweed

Object No.	Title	12.01	12.02	12.08	Total
72	Crackers, 2	0	0	1	1
80	Crib, 6-year size	0	0	1	1
100	Cup, blue, plastic	0	1	0	1
68	Diaper	0	0	4	4
96	Dolls, two, collective	0	2	0	2
98	Doll (1)	0	1	0	1
99	Doll (2)	0	1	0	1
104	Doll, head of (3)	0L	1	0	1
106	Doll, body of (3)	0	1	0	1
24	Doll, large, unspecified (4)	1	0	0	1
107	Dress, doll No. 3	0	1	0	1
111	Dresser, in bedroom	0	1	0	1
44	Feet, both, own	0	2	7	9
77	Foot, right, own	0	1	1	2
84	Feet, both, Randy's	0	0	1	1
12	Floor, in living room	1	0	0	1
32	Garage, blue plastic	4	0	0	4
16	Guitar, broken	1	1	0	2
51	Handle of lid of wood-burning stove	0	0	1	1
52	Hands, both, own	0	0	1	1
26	Hands, both, Vera's	1	0	0	1
78	Hat, Robert's	0	0	2	2
45	Head, own	0	0	1	1
46	Kleenex (1)	0	0	1	1
65	Kleenex (2)	0	0	1	1
91	Knife, paring	0	0	1	1
55	Lamp, china merry-go-round, next to sofa	0	0	2	2
83	Legs, both own	0	0	1	1
57	Leg, right, own	0	0	1	1
66	Legs, both, Robert's	0	0	1	1
17	Money order, unspecified	1	0	0	1
3	Mother	23	34	35	92
85	Mother and Robert, collective	0	0	1	1
105	Mother and Randy, collective	0	1	0	1
94	Mother, Robert, Randy, collective	0	2	0	2
114	Mouth, own	0	4	0	4
47	Nose, own	0	0	1	1
2	Observer (E.B.)	14	0	5	19
95	Observer (D.S.)	0	5	0	5
113	Pants stretcher, unspecified	0	1	0	1
10	Pebble, small	1	0	0	1
18	Pen, unspecified	2	0	0	2
73	Picture, painted on cardboard with small calendar at bottom	0	0	8	8

Tweed

Object No.	Title	12.01	12.02	12.08	Total
49	Plate with spoon, Robert's	0	0	1	1
118	Plate, toy, doll's	0	1	0	1
53	Plate, own	0	0	1	1
75	Radio, clock, plastic front of	0	0	4	4
5	Randy, brother	12	8	19	39
22	Randy and Robert, brothers, collective	4	1	4	9
9	Robert, brother	7	19	30	56
108	Rugs, near bedroom door	0	2	0	2
110	Rug, orange, scatter, near Vera's bed	0	1	0	1
14	Saliva, own	1	0	0	1
101	Saucer from toy basket (1)	0	2	0	2
102	Saucer from toy basket (2)	0	1	0	1
103	Saucers, several, from toy basket, collective	-	1	0	1
90	Screw, small, wooden	0	0	1	1
8	Screwdriver, blue, plastic, child's	4	0	0	4
116	Shoes, both, own	0	1	0	1
97	Shoe, right, own	0	3	0	3
109	Shoe, left, own	0	1	0	1
121	Shoes, and socks, both, own	0	1	0	1
62	Socks, both, own	0	1	4	5
60	Sock, left, own	0	0	1	1
61	Sock, right, own	0	1	1	2
6	Sock, one, white, own	2	0	0	2
42	Spoon, own	0	0	2	2
50	Stove, wood-burning in living room	0	1	2	3
120	Switch, for punishment, mother's	0	1	0	1
56	Switch on lamp, china merry-go-round	0	0	1	1
25	Table, in kitchen	1	0	0	1
86	Telephone, on wall in living room	0	0	1	1
40	Television which worked, in living room, near kitchen door	0	5	0	5
20	Tongue, own	1	1	0	2
19	Tongue, Vera's	1	0	0	1
92	Toys, all, in basket	0	15	0	15
117	Toy, small, green, unspecified	0	1	0	1
115	Toy, squeak (1)	0	1	0	1
119	Toy, squeak (2)	0	1	0	1
7	Vera, sister	8	3	0	11
11	Wall, in living room, next to kitchen	1	0	0	1
82	Washing machine in kitchen	0	0	1	1
39	Wheel, for small unspecified toy car	1	0	0	1

Alphabetical List of Behavior Objects With Number of Object Transactions (f)

Culster

Object No.	Title	01.03	01.04	01.08	01.09	Total
110	Bag, cellophane with fruitcake in it	0	0	2	0	2
132	Bag, plastic, for Stenomask	0	0	3	0	3
69	Beans, cooking on stove	0	0	0	1	1
15	Beans, white, own	1	0	0	0	1
150	Bell, on red ribbon around neck of autograph dog	0	0	1	0	1
4	Blessing, said before meal	1	0	0	0	1
124	Bookshelves in living room	0	0	2	0	2
72	Boots, both, go-go style, mother's	0	0	0	7	7
73	Boot, right, go-go, mother's	0	0	0	5	5
7	Boots, left, go-go- mother's	0	0	0	1	1
89	Bottle, baby, Earl's	0	0	0	1	1
97	Bread, crust (1)	0	0	0	1	1
100	Bread, crust (2)	0	0	0	1	1
19	Bread, spoon, own	1	0	0	0	1
86	Broom	0	0	0	4	4
119	Boy outside, unspecified	0	0	1	0	1
34	Cake, honeybun	0	8	0	0	8
133	Cans, garbage, next to sink	0	0	1	0	1
33	Candy, unspecified	0	1	0	0	1
141	Candy bar, North Pole	0	0	8	0	8
145	Cardboard, in North Pole candy bar	0	0	1	0	1
127	Cheek, right, own	0	0	1	0	1
31	Cheeks, both, own	1	0	0	0	1
140	Chest, own	0	0	2	0	2
20	Christmas tree, aluminum in living room	5	0	0	0	5
98	Cigarette, butt of (1)	0	0	0	3	3
101	Cigarette, butt of (2)	0	0	0	1	1
102	Cigarette, butt of (3)	0	0	0	1	1
103	Cigarette, butt of (4)	0	0	0	1	1
105	Cord, extension	0	0	0	1	1
80	Couch, in living room	0	0	2	4	6
12	Counter separating kitchen and living room	3	0	5	1	9
118	Cup, unspecified	0	0	3	0	3
82	Dictet machine	0	0	0	4	4
117	Dish drainer	0	0	1	0	1

Object No.	Title	01.03	01.04	01.08	01.09	Total
148	Dog, autograph, toy	0	0	11	0	11
79	Doll, large	0	0	0	2	2
88	Doorframe	0	0	0	1	1
146	Doughnut, Opal's	0	0	1	0	1
81	Earl, baby brother	0	0	2	4	6
8	Eyes, both, own	1	1	0	0	2
17	Father	14	6	0	1	21
25	Father and Earl	1	0	0	0	1
44	Feet, both, own	0	1	0	0	1
33	Food, plate: potatoes, white beans, spaghetti, spoon bread; own	5	0	0	0	5
13	Food, plate: white beans, potatoes, spaghetti, spoon bread; Wanda's	1	0	0	0	1
135	Frame, metal, around sink	0	0	2	0	2
112	Fruitcake, in cellophane bag	0	0	2	0	2
137	Fruitcake, 1 crumb, Wanda's	0	0	1	0	1
121	Game, unspecified	0	0	1	0	1
70	Garbage, pan of	0	0	0	2	2
114	Glass, Oliver Walker's	0	0	1	0	1
113	Glass, unspecified	0	0	2	0	2
10	God	1	0	0	0	1
129	Grandmother, mother's mother	0	0	1	0	1
67	Hair, mother's	0	0	0	1	1
66	Hair, wad of doll's, bright, reddish-orange	0	0	0	2	2
7	Hands, both, own	1	0	0	0	1
26	Hand, right, own	1	0	1	1	3
28	Hand, left, own	1	0	0	0	1
91	Hanger, wire, coat (1)	0	0	0	1	1
93	Hanger, wire, coat (2)	0	0	0	2	2
94	Hanger, wire, coat (3)	0	0	0	1	1
95	Hanger, wire, coat, elongated (4)	0	0	0	3	3
6	Head, own	1	0	0	0	1
131	Keys, to observer's (B.M.) car	0	0	1	0	1
134	Knife	0	0	1	0	1
29	Lights on Christmas tree	1	0	0	0	1
21	Light at top of Christmas tree	1	0	0	0	1
32	Magazine (1)	0	1	0	0	1
36	Magazine on sofa (2)	0	9	0	0	9
43	Magazine lying in middle of living room floor (3)	0	4	0	0	4
51	Magazine (4)	0	2	0	0	2
52	Magazine (5)	0	2	0	0	2
53	Magazine (6)	0	3	0	0	3

Object No.	Title	01.03	01.04	01.08	01.09	Total
55	Magazine (7)	0	2	0	0	2
57	Magazine (8)	0	2	0	0	2
58	Magazine (9)	0	1	0	0	1
59	Magazine on arm of sofa (10)	0	2	0	0	2
126	Man, unidentified	0	0	5	0	5
1	Mother	14	24	30	48	116
56	Mother, father, Opal, collective	0	1	0	0	1
120	Mother and Wanda, collective	0	0	7	0	7
92	Nail in wall	0	0	0	1	1
152	Neck, own	0	0	2	0	2
84	Nose, own	-	-	0	2	2
54	Object, unspecified	0	1	0	0	1
116	Observer (B.M.)	0	0	8	0	8
9	Observer (J.R.)	6	4	0	0	10
68	Observer (D.S.)	0	0	0	15	15
35	Oliver Walker, brother	0	5	9	8	22
38	Opal, sister	0	28	8	21	57
139	Opal and aunt (Mrs. Culster's sister)	0	0	1	0	1
130	Oven	0	0	4	0	4
48	Page, in magazine (1)	0	1	0	0	1
50	Page, in magazine (2)	0	2	0	0	2
49	Page, piece of, in unspecified magazine	0	2	0	0	2
78	Pants, rubber, Earl's, on large doll	0	0	0	1	1
59	Pants, own	0	2	0	0	2
83	Paper, long strip	0	0	0	3	3
149	Paper, piece of, bill	0	0	2	0	2
147	Pencil, large, child-size	0	0	2	0	2
2	Pencil and paper used for drawing	1	0	0	0	1
8	Penny, own (1)	0	0	0	1	1
96	Penny (2)	0	0	0	3	3
122	Penny (3)	0	0	3	0	3
123	Penny (4)	0	0	3	0	3
37	Picture, car advertisement, foldout, in magazine No. 2	0	4	0	0	4
46	Picture of unidentified girl in magazine No. 2	0	1	0	0	1
41	Picture of red and blue lettering in magazine No. 2	0	1	0	0	1
47	Picture of sunset with bright sun in magazine No. 2	0	1	0	0	1
39	Picture of something on page in magazine No. 2 (1)	0	1	0	0	1
40	Picture of something in magazine No. 2 (2)	0	1	0	0	1

Object No.	Title	01.03	01.04	01.08	01.09	Total
45	Picture unspecified in magazine No. 2 (3)	0	1	0	0	1
71	Plastic strip	0	0	0	1	1
23	Plate, own	1	0	0	0	1
90	Potato, peelings on floor	0	0	0	1	1
24	Potatoes, on own dinner plate	1	0	0	0	1
60	Purse, turquoise, coin	0	0	5	1	6
106	Record, "Where'd Ya' Find That Pretty Girl?"	0	0	0	1	1
109	Record, unspecified	0	0	0	1	1
104	Record player in plastic cabinet	0	0	1	3	4
138	Record player, arm and needle of	0	0	1	0	1
151	Ribbon, red, around neck of autograph dog	0	0	9	0	9
61	Satchel, book, Wanda's	0	0	0	1	1
143	Scab on own arm	0	0	1	0	1
136	Screw, in metal frame in kitchen	0	0	1	0	1
27	Shirt, own	1	0	0	0	1
42	Shoes, both, own	0	1	0	0	1
85	Shoe, right own	0	0	0	2	2
107	Song, "Candy Kisses" on record	0	0	0	2	2
63	Soup, burned in pan	0	0	0	4	4
22	Spaghetti, on own dinner plate	1	0	0	0	1
64	Spoon, large, used to stir soup	0	0	0	1	1
14	Spoon beside own plate at dinner	1	0	0	0	1
111	Spoon, own	0	0	3	0	3
30	Stool at counter (1)	1	0	0	0	1
99	Stool at counter (2)	0	0	3	1	4
142	Stove, in kitchen	0	0	1	0	1
18	Television	7	0	0	0	7
125	Towel, Wanda's	0	0	5	0	5
87	Trash, Band-Aid, paper, etc.	0	0	0	2	2
77	Trousers, own	0	0	0	3	3
5	Wanda, sister	7	3	34	4	48
11	Wanda and Opal, siblings, collective	1	0	0	1	2
62	Wanda, Opal, Oliver, siblings collective	0	0	0	2	2
16	Water, glass of, own	1	0	0	0	1
65	Window in kitchen	0	0	0	2	2
115	Window sill in kitchen	0	0	1	0	1
144	Wrapper from North Pole candy bar	0	0	2	0	2
76	Zipper, of right go-go boot	0	0	0	2	2
75	Zipper, of left go-go boot, mother's	0	0	0	3	3

Alphabetical List of Behavior Objects With Number of Object Transactions (f)

Roper

Object No.	Title	21.02	21.07	21.08	Total
93	Ankle, right, own	0	0	2	2
17	Apple, unspecified (1)	0	2	0	2
147	Apple, unspecified (2)	1	0	0	1
148	Apple sandwich, own	1	0	0	1
166	Apple seal	1	0	0	1
41	Arm, Mother's, unspecified	0	1	0	1
153	Arm, right, own	1	0	0	1
179	Bag, plastic, Portia's	1	0	0	1
119	Banana, half, own	0	0	4	4
134	Banana, unspecified (1)	0	0	1	1
146	Banana, unspecified (2)	1	0	0	1
15	Bench at picnic table in kitchen	0	1	4	5
39	Benches, of 2 tables outside 1 from each, collective	0	3	0	3
8	Bologna, package with one piece in it	0	1	0	1
124	Bologna, 1 piece, folded w/peanut butter	0	0	2	2
149	Bologna, 1 piece, own	4	0	0	4
96	Bolster, 1, on floor in downstairs playroom	0	0	2	2
86	Boy, age 15, unspecified	0	1	0	1
132	Brown, color in song	0	0	1	1
137	Butter	0	0	1	1
36	Carton, large cardboard containing ducks	0	1	0	1
14	Chair, high, own	0	1	2	3
136	Chair, Phil's	0	0	1	1
19	Cheese, unspecified	0	1	0	1
18	Cheese and crackers	0	1	0	1
71	Child, unidentified	0	1	0	1
78	Constance, friend	0	1	0	1
50	Cookie, Martie's with pink icing	0	1	0	1
51	Cookie, half of Martie's with pink icing	0	1	0	1
52	Cookie, part of half of Martie's with pink icing	0	3	0	3
17	Cookies, Portia's unspecified	1	0	0	1
187	Cookie, frosted, animal (1)	1	0	0	1
188	Cookie, frosted, animal, half (1)	1	0	0	1
189	Cookie, Phil's frosted, animal (2)	1	0	0	1
190	Cookie, piece of No. 2	2	0	0	2

Roper

Object No.	Title	21.02	21.07	21.08	Total
102	Cot bed in downstairs playroom	1	0	0	1
23	Crust of bread, own	0	1	0	1
60	Dee, sister	0	2	13	15
91	Dishwasher	0	1	0	1
97	Doll house, Phil's make-believe under piano	0	0	1	1
29	Door, sliding glass, leading to deck	1	7	1	9
105	Door from downstairs playroom into garage	0	0	1	1
140	Draperies by sliding doors	0	0	1	1
55	Dresser, own	0	1	0	1
61	Duck, Batman	0	8	0	8
38	Duck, Robin	0	7	0	7
37	Ducks (2) Batman & Robin, collective	0	16	0	16
150	Edgar, Phil's friend	15	0	0	15
64	Eric, Randy's friend	0	1	0	1
88	Eric, Randy, Phil, collective	0	1	0	1
155	Roper family, entire, collective	1	0	0	1
32	Feet, both, own	0	1	0	1
103	Feet, both, Phil's	0	0	1	1
181	Finger, index, right, own	1	0	0	1
121	Finger, index, left, own	0	0	3	3
123	Fingers of right hand, own	4	0	3	7
27	Fingers, unspecified	0	1	0	1
22	Fingers, right, three	0	1	0	1
183	Finger, right, unspecified, Edgar's	1	0	0	1
141	Flora, baby sister	2	0	0	2
122	Food, general, unspecified	0	0	1	1
40	Foot, right, own	0	1	0	1
20	Foot, unspecified	0	1	0	1
54	Frito, one, unspecified	0	1	0	1
90	Glass, own	0	1	0	1
125	Glass of milk, own	0	0	1	1
178	Glass, Portia's, unspecified	2	0	0	2
186	Glass, Phil's, unspecified	0	0	1	1
185	Glasses, Portia's, Edgar's, Connie's, Phil's	0	0	1	1
68	Glenn, Phil's friend	0	3	0	3
43	Grass	0	1	0	1
113	Hair, own	0	0	2	2
110	Hand, own, left	0	0	1	1
111	Hand, right, Dee's	0	0	1	1
85	Hands, both, own	0	1	0	1
184	Hands, both, Edgar's	1	0	0	1
120	Honey, small pool on plate	0	0	5	5
139	Honey on table, small bit	0	0	1	1

Roper

Object No.	Title	21.02	21.07	21.08	Total
108	Hose, in backyard	0	0	2	2
70	House, Roper's, own	0	1	0	1
128	Legs, own, both	0	0	1	1
82	Leotards, own	0	1	0	1
156	Lunch, own	4	0	0	4
158	Lunch, Phil's	1	0	0	1
169	Lunch, Portia's	1	0	0	1
172	Lunch, Edgar, Portia's collective	1	0	0	1
142	Magazine, unspecified	1	0	0	1
5	Marie, sister	0	12	6	18
10	Marie, Randy, Patience, Woody, Wade, Constance, Glen, Eric, Patience's friend	0	4	0	4
49	Martie, friend of Trudy	0	8	0	8
89	Milk, glass of, own (1)	0	1	0	1
157	Milk, glass of, own (2)	5	0	0	5
163	Milk, Phil's glass of	2	0	0	2
46	Milk, glass of, unspecified	0	1	0	1
7	Milk, small glass of, own (3)	0	4	0	4
176	Milk, glass of, Edgar's	6	0	0	6
197	Milk, small amount spilled on table	1	0	0	1
1	Mother	21	7	28	56
47	Mouth, own	0	2	0	2
45	Napkin, crumpled and dirty	0	5	0	5
161	Napkin, paper, own (1)	7	0	0	7
162	Napkin, paper, Phil's	4	0	0	4
194	Napkin, own (2)	5	0	0	5
195	Napkin holder	2	0	0	2
53	Nose, own	0	2	1	3
127	Nose, Phil's	0	0	1	1
69	Objects unspecified, held by Glenn	0	1	0	1
9	Observer (E.B.)	0	10	0	10
99	Observer (D.S.)	3	0	2	5
26	Orange, Patience's friend's	0	1	0	1
25	Orange, unspecified	0	1	0	1
191	Pants, own, wearing them	2	0	0	2
116	Paper plate (1)	0	0	1	1
117	Paper plate, w/Santa Claus on it, own (2)	0	0	1	1
4; 160	Paper towel, place mat, own Paper towel, place mat, own	5	2	0	7
11	Patience, sister	0	3	6	9
106	Patience, Vera, Trudy, collective	0	0	1	1
130	Patience, Dee, Woody, Randy, Vera, Trudy, collective	0	0	3	3

Roper

Object No.	Title	21.02	21.07	21.08	Total
118	Patience, Phil, Woody, Randy, Mother, Dee, Marie, Trudy Alice, Vera, collective	0	0	3	3
65	Patience and friend, collective	0	1	0	1
24	Patience's friend	0	1	0	1
3	Peanut butter	0	1	2	3
2	Peanut butter jar, lid of	0	1	0	1
48	Peanut butter on mouth, own	0	2	0	2
35	Phil, brother	36	15	34	86
28	Phil, Trudy, Martie, collective	0	3	0	3
81	Phil and Glenn, collective	0	1	0	1
175	Phil and Edgar, collective	2	0	0	2
177	Phil, Edgar, Portia, collective	2	0	0	2
95	Piano, in playroom downstairs	0	0	4	4
98	Piano stool by piano in playroom	0	0	1	1
16	Place mat with sandwich, own collective	0	0	1	1
164	Portia and Edgar, collective	3	0	0	3
168	Portia, friend	11	0	0	11
104	Post in downstairs playroom	0	0	1	1
154	Potty, small child's portable toilet	4	0	0	4
59	Railing, at steps which lead from deck to yard	1	2	0	3
44	Randy, brother	1	2	2	5
79	Randy, Trudy, Eric, Phil, Martie, collective	0	1	0	1
42	Randy and others, unspecified, collective	0	2	0	2
58	Randy and Eric, collective	0	4	0	4
129	Randy and Woody, collective	0	0	2	2
87	Sand from bottom of wagon	0	1	0	1
73	Sandbox in yard	0	1	0	1
126	Sandwich, unspecified	0	0	1	1
6	Sandwich, peanut butter and honey, own (1)	0	5	0	5
115	Sandwich, peanut butter and honey, own (2)	0	0	8	8
145	Sandwich, peanut butter and honey, own (3)	4	0	0	4
159	Sandwich, apple, Phil's	3	0	0	3
165	Sandwich, apple, own	3	0	0	3
173	Sandwiches, apple, own and Phil's collective	1	0	0	1
170	Sandwich, Portia's bologna	1	0	0	1
80	Saw, power, sound of	0	1	0	1

Roper

Object No.	Title	21.02	21.07	21.08	Total
143	Scissors	2	0	0	2
57	Scraper, paint	0	1	0	1
180	Seesaw, pretend, unspecified	1	0	0	1
94	Shoe, right, own	0	0	4	4
112	Shoulders, Dee's	0	0	1	1
92	Slide, made from folding aluminum plastic web cot	0	0	5	5
138	Somebody, unspecified	0	0	1	1
34	Steps leading from deck to yard	0	6	0	6
74	Stick from sandbox	0	3	0	3
76	Stroller	0	3	0	3
75	Stroller, handle of	0	1	0	1
67	Sunglasses, pink, Patience's	0	1	0	1
144	Sweater, unspecified, own	1	0	0	1
66	Sweater, navy blue, own	0	1	0	1
152	Sweater, Phil's	1	0	0	1
84	Swing, double, part of swing set	0	1	0	1
83	Swing set in backyard	0	1	0	1
13	Table, picnic, in kitchen	-	2	1	3
31;151	Table, picnic, child-size on deck	7	3	0	10
33	Table, picnic, large on deck	0	2	0	2
21	Table, leg of in kitchen	0	1	0	1
196	Telephone cord, extra long, unspecified	1	0	0	1
135	Thad				
12	Tongue, own	1	1	0	2
100; 101	Toy, round, w/pull string, emits animal sounds	0	0	2	2
63	Trampoline	0	3	1	4
193	Tree in yard, unspecified	1	0	0	1
30	Trudy, sister	1	16	2	19
56	Wade, friend	0	2	0	2
62	Wade and Glenn, collective	0	2	0	2
77	Wagon, large, red w/black handle	0	9	0	9
109	Water, drink of, unspecified	0	0	1	1
192	Water, bucket of	1	0	0	1
167	Water, glass of, own	2	0	0	2
107	Water, spray from hose	0	0	3	3
171	Wind	7	0	0	7
114	Woody, brother	0	0	4	4
174	Woofer, dog	1	0	0	1
131	Yellow, color, in song	0	0	1	1

APPENDIX E

BEHAVIOR OBJECTS LISTED IN RANK ORDER ACCORDING TO NUMBER OF OBJECT TRANSACTIONS

Behavior Objects Listed in Rank Order According To Number of Object Transactions (f)

Tweed

Object No.	Title	f
3	Mother	92
9	Robert, brother	56
5	Randy, brother	39
2	Observer (E.B.)	19
92	Toys, all, in basket	15
7	Vera, sister	11
21	Boot, toy, small, red, plastic	9
44	Feet, both, own	9
73	Picture, painted on cardboard with small calendar at bottom	8
93	Basket, in which toys are kept, large, laundry	7
37	Car, Robert's	7
95	Observer (D.S.)	5
62	Socks, both, own	5
40	Television, which worked, in living room	5
48	Boots, both, white leather, own	4
54	Crackers, few from package, own	4
68	Diaper, unspecified	4
32	Garage, blue plastic	4
114	Mouth, own	4
75	Radio, clock, plastic, front of	4
8	Screwdriver, blue, plastic, child's	4
13	Belt, man's (2)	3
58	Boot, white, leather, right, own	3
59	Boot, white, leather, left, own	3
71	Chair, overstuffed, armchair, near television and bedroom door	3
1	Chair, child-size, green folding	3
30	Couch, in living room	3
97	Shoe, right, own	3
50	Stove, wood burning, in living room	3
89	Ashtray, unspecified	2
23	Bed, bunk, end part of frame	2
38	Car, Randy's, with motor	2
31	Cars, four (blue, black, brown, yellow) with toy garage, own	2
76	Comb, unspecified	2
96	Dolls, two, collective	2
77	Foot, right, own	2
16	Guitar, broken	2
78	Hat, Robert's	2

Tweed

Object No.	Title	f
5?	Lamp, china merry-go-round, next to sofa	2
9?	Mother, Robert, Randy, collective	2
1?	Pen, unspecified	2
108	Rugs, near bedroom door	2
101	Saucer, from toy basket (1)	2
61	Sock, right, own	2
6	Sock, one, white, own	2
42	Spoon, own	2
20	Tongue, own	2
43	Baked beans, on own plate	1
87	Beds, bunk	1
112	Bedspread, on unspecified bed	1
63	Belt, unspecified (1)	1
15	Boot, right, Robert's	1
64	Boots, both, Robert's	1
81	Cabinet, next to washing machine in kitchen	1
36	Car, black, plastic	1
33	Car, blue, plastic	1
35	Car, brown, plastic	1
34	Car, yellow, plastic	1
70	Ceiling, of living room	1
29	Chair, by kitchen table	1
4	Chair, overstuffed, rocking, own	1
79	Chest, cedar	1
69	Clothes, hanging in closet in bedroom	1
27	Cracker, one piece (1)	1
28	Cracker, one piece (2)	1
41	Cracker (1)	1
74	Crackers, package of, on table	1
67	Crackers, Robert's	1
72	Crackers (2)	1
80	Crib, six-year size	1
100	Cup, blue, plastic	1
98	Doll (1)	1
99	Doll (2)	1
104	Doll, head of (3)	1
106	Doll, body of (3)	1
24	Doll, large (4)	1
107	Dress, doll, No. 3's	1
111	Dresser, in bedroom	1
84	Feet, both, Randy's	1
12	Floor, in living room	1
51	Handle, of lid of wood burning stove	1
52	Hands, both, own	1
26	Hands, both, Vera's	1

Tweed

Object No.	Title	f
45	Head, own	1
46	Kleenex (1)	1
65	Kleenex (2)	1
91	Knife, paring	1
83	Legs, both, own	1
57	Leg, right, own	1
66	Legs, both, Robert's	1
17	Money order, unspecified	1
85	Mother, Robert, collective	1
105	Mother, Randy, collective	1
47	Nose, own	1
113	Pants stretcher, unspecified	1
10	Pebble, small	1
53	Plate, own	1
49	Plate, with spoon, Robert's	1
118	Plate, toy, doll's	1
110	Rug, orange, scatter, near Vera's bed	1
14	Saliva, own	1
102	Saucer, from toy basket (2)	1
103	Saucers, several, from toy basket, collective	1
90	Screw, small, wooden	1
116	Shoe, both, own	1
109	Shoe, left, own	1
60	Sock, left, own	1
120	Switch, for punishment, Mother's	1
56	Switch, on lamp, china merry-go-round	1
25	Table, in kitchen	1
86	Telephone, on wall in living room near kitchen door	1
19	Tongue, Vera's	1
117	Toy, small, green	1
115	Toy, squeak (1)	1
119	Toy, squeak (2)	1
11	Wall, in living room next to kitchen	1
82	Washing machine in kitchen	1
39	Wheel, for small unspecified toy car	1

Behavior Objects Listed in Rank Order According To Number of Object Transactions (f)

Culster

Object No.	Title	f
1	Mother	116
38	Opal, sister	57
5	Wanda, sister	48
35	Oliver Walker, brother	22
17	Father	21
68	Observer (D.S.)	15
148	Dog, toy, autograph	11
9	Observer (J.R.)	10
12	Counter, separating kitchen and living room	9
36	Magazine, on sofa (2)	9
151	Ribbon, red, around neck of autograph dog	9
34	Cake, honeybun	8
141	Candy bar, North Pole	8
116	Observer (B.M.)	8
72	Boots, both, go-go style, Mother s	7
120	Mother and Wanda, collective	7
18	Television in living room	7
80	Couch in living room	6
81	Earl, baby brother	6
60	Purse, turquoise, coin	6
73	Boot, right, go-go style, Mother's	5
20	Christmas tree, aluminum, in living room	5
33	Food, plate: potatoes, white beans, spaghetti, spoon bread; own	5
126	Man, unidentified	5
125	Towel, Wanda's	5
86	Broom	4
82	Dictet machine	4
43	Magazine, lying in middle of living room floor (3)	4
130	Oven	4
37	Picture, car advertisement, foldout in magazine (2)	4
104	Record player, in plastic cabinet	4
63	Soup, burned in pan	4
99	Stool at counter (2)	4
132	Bag, plastic, for Stenomask	3
98	Cigarette, butt of (1)	3
118	Cup, unspecified	3
26	Hand, right, own	3
95	Hanger, coat, wire, elongated	3
53	Magazine (6)	3
83	Paper, long strip	3

Culster

Object No.	Title	f
96	Penny (2)	3
122	Penny (3)	3
123	Penny (4)	3
111	Spoon, own	3
77	Trousers, own	3
75	Zipper, of left go-go boot, Mother's	3
110	Bag, cellophane with fruitcake in it	2
124	Bookshelves, in living room	2
140	Chest (part of body) own	2
79	Doll, large	2
8	Eyes, both, own	2
135	Frame, metal, around sink	2
112	Fruitcake, in cellophane bag	2
70	Garbage, pan of	2
113	Glass unspecified	2
66	Hair, wad of doll's, bright, reddish-orange	2
93	Hanger, coat, wire (2)	2
51	Magazine (4)	2
52	Magazine (5)	2
55	Magazine (7)	2
57	Magazine (8)	2
59	Magazine on arm of sofa (10)	2
152	Neck, own	2
84	Nose, own	2
50	Page, in magazine (2)	2
49	Page, piece of, in unspecified magazine	2
59	Pants, own	2
149	Paper, piece of, bill	2
147	Pencil, large, child-size	2
85	Shoe, right, own	2
107	Song "Candy Kisses," on record	2
37	Trash, Band-Aids, paper,, other assorted debris	2
11	Wanda and Opal, sisters, collective	2
62	Wanda, Opal, and Oliver, siblings, collective	2
65	Window in kitchen	2
144	Wrapper from North Pole candy bar	2
76	Zipper, of right go-go style boot	2
69	Beans, cooking on stove	1
15	Beans, white, own	1
150	Bell, on red ribbon around neck of autograph dog	1
4	Blessing, said before meal	1
7	Boot, left, go-go-style, Mother's	1
89	Bottle, baby, Earl's	1
97	Bread, crust (1)	1
100	Bread, crust (2)	1

Culster

Object No.	Title	f
19	Bread, spoon, own	1
119	Boy, outside, unspecified	1
133	Cans, garbage, next to sink	1
33	Candy, unspecified	1
145	Cardboard, in North Pole candy bar	1
127	Cheek, right, own	1
131	Cheeks, both, own	1
101	Cigarette, butt (2)	1
102	Cigarette, butt (3)	1
103	Cigarette, butt (4)	1
105	Cord, extension	1
117	Dish drainer	1
88	Doorframe	1
146	Doughnut, Opal's	1
25	Father and Earl, collective	1
44	Feet, both, own	1
13	Food, plate of: white beans, potatoes, spaghetti, spoon bread; Wanda's	1
137	Fruitcake, one crumb, Wanda's	1
121	Game, unspecified	1
114	Glass, Oliver Walker's	1
10	God	1
129	Grandmother, Mother's Mother	1
67	Hair, Mother's	1
7	Hands, both, own	1
28	Hand, left, own	1
91	Hanger, coat, wire (1)	1
94	Hanger, coat, wire (3)	1
6	Head, own	1
131	Keys to Observer's (B.M.) car	1
134	Knife, unspecified	1
29	Lights, on Christmas tree	1
32	Magazine (1)	1
58	Magazine (9)	1
56	Mother, Father, and Opal, collective	1
92	Nail in wall	1
54	Object, unspecified	1
139	Opal and aunt (Mrs. Culster's sister), collective	1
48	Page in magazine (1)	1
2	Pencil and paper, used for drawing	1
8	Penny, own (1)	1
46	Picture of unidentified girl in magazine (2)	1
41	Picture of red and blue lettering in magazine (2)	1
47	Picture of sunset in magazine (2)	1
39	Picture of something on page in magazine No. 2, (1)	1

Culster

Object No.	Title	f
40	Picture of something in magazine No. 2, (2)	1
45	Picture unspecified in magazine No. 2, (3)	1
71	Plastic strip	1
23	Plate, own	1
90	Potato, peelings on floor	1
24	Potatoes, on own dinner plate	1
106	Record, "Where'd Ya' Find That Pretty Girl?"	1
109	Record, unspecified	1
138	Record player, arm and needle of	1
61	Satchel, book, Wanda's	1
143	Scab, on own arm	1
136	Screw, in metal frame in kitchen	1
27	Shirt, own	1
42	Shoes, both, own	1
22	Spaghetti, on own dinner plate	1
64	Spoon, large, used to stir soup	1
14	Spoon beside own plate at dinner	1
30	Stool at counter (1)	1
142	Stove, in ktichen	1
16	Water, glass of, own	1
115	Window sill, in kitchen	1

Behavior Objects Listed In Rank Order According

To Number of Object Transactions (f)

Roper

Object No.	Title	f
35	Phil, brother	86
1	Mother	56
30	Trudy, sister	19
5	Marie, sister	18
37	Ducks (2), Batman and Robin, collective	16
60	Dee, sister	15
150	Edgar, Phil's friend	15
168	Portia, friend	11
9	Observer (E.B.)	10
31; 151	Table, picnic, child-size on deck	9
29	Door, sliding glass, leading to deck	9
11	Patience, sister	9
77	Wagon, large, red with black handle	9
61	Duck, Batman	8
49	Martie, friend of Trudy	8
115	Sandwich, own, peanut butter and honey (2)	8
38	Duck, Robin	7
123	Fingers, own, of right hand	7
161	Napkin, own, paper (1)	7
4; 160	Place mat from paper towel, own	7
171	Wind	7
176	Milk, class of, Edgar's	6
34	Steps leading from deck to yard	6
15	Bench, picnic table bench in kitchen	5
120	Honey, small pool on own plate	5
157	Milk, glass of, own	5
45	Napkin, crumpled and dirty	5
194	Napkin, own	5
99	Observer (D.S.)	5
44	Randy, brother	5
6	Sandwich, peanut butter and honey, own (1)	5
92	Slide made from folding aluminum plastic web cot	5
119	Banana, half, own	4
149	Bologna, 1 piece, own	4
156	Lunch, own	4
10	Marie, Randy, Eric, Patience, Woody, Constance, Patience's friend, collective	4
7	Milk, small glass of, own	4
162	Napkin, paper, Phil's	4
95	Piano, in playroom downstairs	4
154	Potty, small child's portable toilet shape	4
58	Randy and Eric, collectively	4

Roper

Object No.	Title	f
145	Sandwich, own, peanut butter and honey (3)	4
94	Shoe, right, own	4
63	Trampoline	4
114	Woody, brother	4
39	Benches, 1 bench from each of 2 tables outside, collective	3
14	Chair, high, own	3
52	Cookie, part of half of Martie's with pink icing	3
121	Finger, index, left, own	3
68	Glenn, Phil's friend	3
53	Nose, own	3
118	Patience, Phil, Woody, Randy, Mother, Dee, Marie, Trudy Alice, Vera, collective	3
3	Peanut butter	3
28	Phil, Trudy, Martie, collective	3
164	Portia and Edgar	3
59	Railing at steps which lead from deck to yard	3
159	Sandwich, apple, Phil's	3
165	Sandwich, apple, own	3
74	Stick from sandbox	3
76	Stroller	3
13	Table, picnic in kitchen	3
107	Water, spray from hose	3
93	Ankle, right, own	2
17	Apple in kitchen, unspecified	2
124	Bologna, folded w/peanut butter (1)	2
96	Bolster, on floor in downstairs playroom (1)	2
190	Cookie, given to Connie by Phil, piece of (2)	2
141	Flora, baby sister	2
178	Glass, Portia's unspecified	2
113	Hair, own	2
108	Hose in backyard	2
163	Milk, glass of, Phil's	2
47	Mouth, own	2
195	Napkin holder	2
191	Pants, wearing them, own	2
48	Peanut butter on mouth	2
175	Phil and Edgar, collective	2
177	Phil, Edgar, Portia, collective	2
42	Randy and others unspecified	2
129	Randy and Woody, collective	2
143	Scissors	2
33	Table, picnic, large, on deck	2
12	Tongue, own	2
100;101	Toy, round, w/pull string, emits animal sounds	2

Roper

Object No.	Title	f
56	Wade, friend	2
62	Wade and Glenn, collective	2
167	Water, glass of, own	2
147	Apple, unspecified	1
148	Apple, sandwich, own	1
166	Apple peel	1
41	Arm, Mother's	1
153	Arm, right, own	1
179	Bag, plastic, Portia's	1
134	Banana, unspecified	1
146	Banana, unspecified	1
8	Bologna, package, w/1 piece in it	1
86	Boy, age 15, unspecified	1
132	Brown, color, in soc[illegible]	1
137	Butter on table top	1
36	Carton, large cardboard, containing ducks	1
136	Chair, in kitchen, Phil's	1
19	Cheese, unspecified	1
18	Cheese and crackers	1
17	Child, unidentified	1
78	Constance, friend	1
50	Cookie, Martie's w/pink icing	1
51	Cookie, Martie's w/pink icing, half	1
177	Cookies, Portia's unspecified	1
187	Cookie, frosted, animal (1)	1
188	Cookie, frosted, animal, half (1)	1
189	Cookie, Phil's frosted, animal, (2)	1
102	Cot bed in downstairs playroom (not used as slide)	1
23	Crust of bread	1
91	Dishwasher	1
97	Doll house, Phil's make-believe, under piano	1
105	Door from downstairs playroom into garage	1
140	Draperies by sliding doors	1
55	Dresser, own	1
64	Eric, Randy's friend	1
88	Eric, Randy, and Phil, collective	1
155	Roper family, entire	1
32	Feet, both, own	1
103	Feet, both, Phil's	1
181	Finger, index, right, own	1
27	Fingers, unspecified	1
22	Fingers, right hand (3)	1
183	Fingers, Edgar's unspecified, right w/milk dripping	1
122	Food, general, unspecified	1
40	Foot, right, own	1
20	Foot, unspecified	1

Roper

Object No.	Title	f
54	Frito, unspecified (1)	1
90	Glass, own (1)	1
125	Glass of milk, own	1
186	Glass, Phil's unspecified	1
185	Glasses, sets of 2 match, Portia's, Edgar's, Connie's, Phil's (4)	1
43	Grass	1
110	Hand, left, own	1
111	Hand, right, Dee's	1
85	Hands, both, own	1
184	Hands, both, Edgar's	1
139	Honey on table, small bit	1
70	House, Roper's,own	1
128	Legs, both, own	1
82	Leotards, wearing them, own	1
158	Lunch, Phil's	1
169	Lunch things, Portia's	1
172	Lunch things, Edgar and Portia, collective	1
142	Magazine, unspecified	1
89	Milk, glass of, own	1
46	Milk, glass of, unspecified	1
197	Milk, small amount spilled on table	1
127	Nose, Phil's	1
69	Objects unidentified, held by Glenn	1
26	Orange, Patience's friend's	1
25	Orange, unspecified	1
116	Paper plate (1)	1
117	Paper plate (2) w/Santa Claus on it, own	1
106	Patience, Vera, Trudy, collective	1
130	Patience, Dee, Woody, Randy, Vera, Trudy, collective	1
65	Patience and friend, collective	1
24	Patience's friend	1
2	Peanut butter jar, lid of	1
81	Phil and Glenn, collective	1
98	Piano stool by piano in downstairs playroom	1
16	Place mat w/own sandwich, collective	1
14	Post in downstairs playroom	1
79	Randy, Trudy, Eric, Phil, Martie, collective	1
87	Sand from wagon bottom	1
73	Sandbox in yard	1
126	Sandwich, unspecified	1
173	Sandwiches, apple, Phil's and own	1
170	Sandwich, bologna Portia's	1
80	Saw, power sound of	1
57	Scraper, paint	1

Roepr

Object No.	Title	f
180	See-saw, pretend, unspecified	1
112	Shoulders, Dee's	1
138	Somebody, unspecified	1
75	Stroller, handle of	1
67	Sunglasses, pink, Patience's, holds	1
144	Sweater, own, unspecified	1
66	Sweater, navy blue, own	1
152	Sweater, Phil's	1
84	Swing, double, part of swing set	1
83	Swing set in backyard	1
21	Table, leg of picnic table in kitchen	1
196	Telephone cord, extra long, unspecified	1
135	Thad	1
193	Tree in yard, unspecified	1
109	Water, drink of, unspecified	1
192	Water, bucket of, used to wash picnic table	1
174	Woofer, dog	1
131	Yellow, color, in song	1

APPENDIX F

SUMMARY OF DATA

Name	Obs. No.	No. of Episodes	No. of Minutes	Ep. Min.	No. of Trans.	Trans. Ep.	Trans. Min.	No. Diff. Objs.	Obj. Min.	Obj. Ep.
Tweed	12.01	80	30	2.67	116	1.45	3.87	39	1.3	0.5
	12.02	86	25	3.44	162	1.88	6.48	45	1.8	0.5
	12.08	101	33	3.06	196	1.94	5.94	58	1.8	0.6
	Total	267	88	3.03	474	1.77	5.39	121	1.4	0.4
Culster	01.03	53	10	5.30	84	1.58	8.40	32	3.2	0.6
	01.04	88	17	5.18	129	1.46	7.59	34	2.0	0.4
	01.08	116	30	3.87	213	1.83	7.07	53	1.8	0.5
	01.09	115	30	3.83	201	1.75	6.70	58	1.9	0.5
	Total	372	87	4.27	627	1.68	7.20	152	1.7	0.4
Roper	21.02	104	31	3.35	230	2.18	7.32	66	2.1	0.6
	21.07	114	35	3.26	251	2.20	7.17	91	2.6	0.8
	21.08	107	26	4.12	187	1.75	7.19	62	2.4	0.6
	Total	325	92	3.53	665	2.05	7.23	197	2.1	0.6